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European Free Trade Areas as an alternative to Doha

- Impacts of US, Russian and Chinese FTAs

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Abstract

This paper discusses possible bilateral alternatives to a multilateral trade agreement in the light of the difficulties of reaching a successful conclusion to the Doha round. We analyse the economic impacts of three envisioned regional Free Trade Agreements (FTAs), between EU and USA, EU and China and EU and Russia, and compare them with the probable outcome of a Doha round. The analyses utilise a modified and updated version of the GTAP (Global Trade Analysis Project) Computable General Equilibrium (CGE) trade model together with the current database (version 6) based on the year 2001. We find that bilateral free trade agreements with Russia, China and the United States each serve as a viable EU alternative to the currently stalled multilateral Doha Round, with EU welfare gains estimated at US$ 13.4 bn., US$ 4.6 bn. and US$ 3.5 bn. respectively. However, bilateral agreements are clearly 'second best' in nature, as the benefits accrue to the trade agreement partners at the expense of the rest of the world. The global welfare impacts of the Russian, the Chinese and the US FTAs are respectively US$ 1.8 bn., US$ 9.1 bn. and US$ -2.7 bn. compared with a global outcome of the Doha round estimated at US$ 87 bn. We conclude that a multilateral agreement remains the preferred option.

Key words: FTA, RTA and PTA, WTO, European Union, US, Russia and China.

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1. Introduction

The slow progress of the Doha Round since its 2001 launch in Doha, and its collapse (or "suspension" or "time-out" as it is termed by some officials) in July 2006 have strengthened the interest in entering Regional Trade Agreements (RTAs) or establishing Free Trade Areas (FTAs). It is expected that such agreements generate alternative opportunities for increased trade and cooperation, yielding economic gains for the selected participating economies and industries, as opposed to a multilateral pattern of benefits under the auspices of the WTO.

Heightened interest in bilateral trade liberalisation approaches arises from a widely held perception that a multilateral liberalisation deal through the WTO is, at least for now, closed or precluded. In addition, many also feel that the negotiations have become overly cumbersome and complicated, and have limited the possibilities for a positive and comprehensive outcome of the negotiations. Consequently, some governments consider WTO article XXIV as the only viable option for further trade liberalisation, despite the article's "second best" status when compared with multilateral WTO-based solutions.

Therefore, with the reduced and perhaps even questionable prospects of what the WTO actually can deliver, particularly in such areas as agriculture, services, investments and government procurement, the bilateral dialog between many of the world trading nations has intensified. The Free Trade Areas have regained momentum in terms of their numbers, and perhaps even more importantly, they seem to be broader in their coverage as compared to earlier free trade agreements. Agreements with services provisions are increasingly common, and an increasing number of agreements contain trade provisions in areas not regulated multilaterally.

Although the EU continues to hope for Doha round progress, there has been increasing momentum in Europe for extending the number of bilateral trade agreements. The European Parliament, Prime Ministers and centrally placed policy makers have also discussed the option of establishing new bilateral trade agreements – one of them being a North Atlantic EU-US free trade area. In addition, the EU is discussing an EU-Russian regional trade agreement. Finally, ongoing efforts to improve trade relations and cooperation between Asia and Europe are within the next 3-4 years expected to inspire stronger (political and industry) interests in entering into an EU-China bilateral trade agreement.

The motivation for this paper is the ongoing discussion in the EU of the prospects for establishing Free Trade Areas around the world. In particular we study the impacts of 'at-the-border-components' of EU entering separate free trade areas with the United States, Russia and China. We therefore restrict the analysis of the impacts of an elimination of all tariffs and export subsidies/taxes on all commodities between the members of the Free Trade Area. We thereby abstract from potentially more important aspects related to liberalisation of trade in services and investment, financial market harmonisation, trade facilitation, competition policies etc. This means ignoring important expected welfare gains from productivity boosts that such components of 'modern free trade areas' may bring.

The questions we address in this paper are:

- What are the likely impacts for European economy of 'at-the-border-engagement' in FTA's with the US, Russia and China (as compared to a multilateral agreement)?
- What are the implications for individual EU members?
- What are the worldwide consequences of the 'at-the-border-engagement' in FTA's?

Finally, we conclude the paper by discussing if the EU would still not gain more by continuing to push for a comprehensive multilateral trade agreement. As the analysis demonstrates: the gains from 'at-the-border' free trade agreements will only yield the European Union and the partner countries marginal economic gains. Reopening and concluding a comprehensive multilateral trade agreement will in the long run be of a more significant importance to global trade and welfare.

A historical perspective

Since the Second World War, various rounds of trade talks, from the 1947 talks in Geneva to the 1979 Tokyo Round, have elicited substantial progress towards global trade liberalisation, particularly in terms of tariff reductions. In the same period, world trade increased tremendously. By 2005 world merchandise exports had increased to more than 10,000 billion US dollars and the average applied tariff on all goods was 3.7 percent for the United States, 4.2 percent for the European Union and 3.1 percent for Japan. For China, Russia and India the average applied tariff on all goods was 10, 9.5 and 18.3 percent, respectively (WTO, 2006).

This sustained wave of increased trade and progressive trade liberalisation also coincided two waves of regional trade arrangements. *The first wave* occurred during the early 1960s and 1970s. From the establishment of the European Common Market, it spread throughout Africa, Latin America and other parts of the developing world. The US was then a hegemon and a strong supporter of multilateralism. With the exception of the creation of the European Community, the US did not endorse the 'regional approach'.

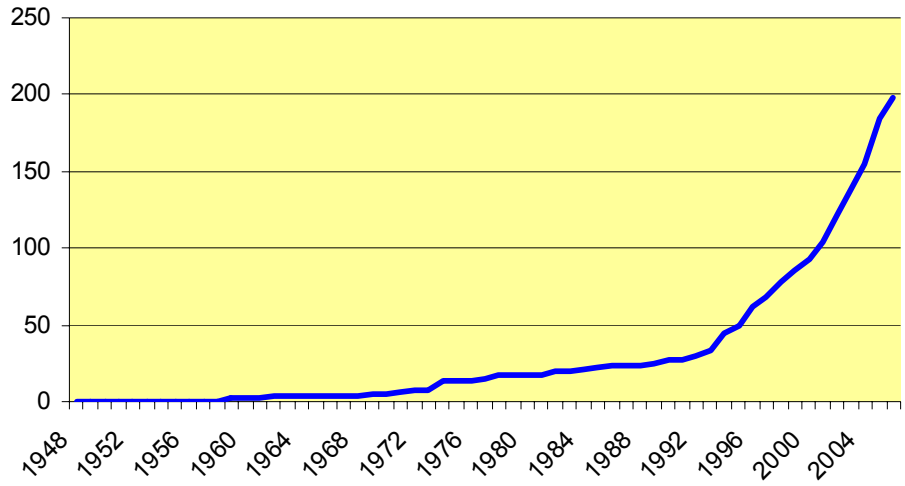
The second wave started in the middle of the 1980s and substantially accelerated during the mid-1990s (see figure 1 below). The second wave witnessed the US role as a promoter of bilateral agreements: FTAs with Israel and Canada, and a proposed hemispheric FTA with the Enterprise for the Americas Initiative. In 1994, The North American Free-Trade Area (NAFTA) with Canada and Mexico was signed. At the same time, the European Union was enlarged to include Greece, Portugal, Spain, Sweden and Finland. Later the EU entered the so-called European Agreements and recently the EU has been enlarged to include 12 Central and Eastern European Countries, resulting in a European Union now with 27 member states.

This second wave seems to have been further encouraged by the slow progress and recent suspension of the WTO trade negotiations. Since the GATT's 1947 creation, there have been 360 regional trade agreements, and 211 of these are currently registered with the WTO. Of these, 133 are free trade agreements and 11 are customs unions (WTO, September 2006).

A notable trend is a shift in the geographical composition of regional trade agreements. While RTAs were traditionally signed by geographically proximate trade partners (e.g. EU and NAFTA), more and more trade agreements are inter-regional in nature. Examples are those between US and Australia (January 2005), EFTA and Chile (December 2004), and EC and South Africa (January 2000).

Regional trade agreements among developing countries are also increasing. Of those reported as notified to the WTO and currently in force, 15 were notified during the 50 years of the GATT, while the other 23 have been reported as notified in the 11 years since the establishment of the WTO. Further, the majority of these agreements, currently in force but not notified to the WTO, are between developing countries, i.e. an increasing number of South-South trade agreements under negotiations (WTO, October 2006).

Figure 1. Number of Regional Trade Agreements in force by date of entry into force



Source: WTO (2006).

Examples of recent FTAs

Since 2000, the United States has signed seven regional trade agreements (with Australia, Bahrain, Chile, Jordan, Morocco, Oman and Singapore) and it is currently negotiating 16 new trade agreements with countries in South America, Asia as well as in the Middle East and Africa. This represents a significant increase in the number of US regional trade deals from the existing nine agreements (also counting NAFTA and Israel) notified to the WTO.

Australia is also among those countries giving a high priority to regional trade agreements. In 2005, Australia formulated three new regional trade agreements (with the US, Thailand and Singapore), and is currently negotiating agreements with China, Malaysia and ASEAN, while an FTA with Japan is being planned. In total, Australia has by 2006 notified six goods regional trade agreements to the WTO.

In addition to the association agreements with a varied array of 12 countries/regions, the EU is currently negotiating or planning bilateral agreements with the following countries and blocs: Bosnia and Herzegovina, Serbia and Montenegro, Albania, Syria, MERCOSUR, Russia and Canada. In total the EU has notified the WTO of 23 goods regional trade agreements.

In July 2006, the European Commission announced that future EU/Russian cooperation efforts will include discussion of an EU-Russian free trade area. It is the ambition of the European Union to move towards a free-trade area to be completed once Russia accedes to the WTO - which after the US–Russian agreement in November 2006 might take place in 2007.

In addition to these ongoing or planned bilateral trade agreements, many of the political leaders in Europe, among them the Danish Prime Minister Anders Fogh Rasmussen and German Chancellor Angela Merkel, have recently voiced the need for considering a "plan B" to the multilateral approach: more specifically, the possible consideration of a trans-Atlantic EU-US free trade zone, should the Doha Round ultimately fail.[2]

The issue of a free-trade zone between the EU and the US was discussed in the European Parliament, approving a resolution based on the Report on EU-US Transatlantic economic relations. The report calls for a transatlantic barrier-free market by 2015 and recommends that by the June 2006 summit, the EU and US should agree to update the New Transatlantic Agenda of 1995 and the Transatlantic Economic Partnership of 1998. The report also recommends designing a new Transatlantic Partnership Agreement that leads to the achievement of a barrier-free transatlantic market by 2015 and includes a 2010 accelerated target date for financial services and capital markets.[3] The report clearly states the need for a more visionary and strategic approach suggest-

[2] The first calls for negotiating a North Atlantic free trade agreement first came from the Canadian Prime Minister Chretien and in the spring of 1995 EU trade minister Sir Leon Brittan, British Prime Minister John Major, German Foreign Minister Klaus Kinkel and other high-ranging European officials endorsed the proposal.

[3] On the **Doha Development Agenda** the European Parliament urged the EU and the US to remain fully committed to the WTO multilateral negotiations and not to engage in competition for bilateral or regional trade agreements. It welcomed the agreement within the WTO framework on the definitive elimination of all forms of agricultural export subsidies, including those in the form of food aid and other export refund systems, by 2013 and stresses that comparable progress has yet to be achieved in the areas of domestic support and market access.

ing the inclusion of competition policies, standardised corporate governance, compatible or common standards and more effective regulatory cooperation.
The EU Parliament's resolution indicates a need for broadening and deepening the existing cooperative framework between the EU and the US and suggests that such a barrier-free transatlantic market should encompass not only the 'traditional commodity trade issues', but should also facilitate the need for cooperation in a number of new areas:

- *Reducing regulatory barriers and harmonising standards.* Regulatory barriers and non harmonised standards are seen as one of the most significant obstacles to trade and investment between the EU and the US.

- *Stimulating open and competitive capital markets*. Mutual recognition and gradual convergence of accounting standards based on reliable regulatory supervision, will lead to reduced listing costs.

- *Spurring innovation and the development of technology*. Promoting cooperation in research and development and to pursue investment programmes, in certain fields.

Additional to a possible FTA, and as expected, the EU and US discussed many other highly topical issues at the June 2006 summit. Issues included terrorism and the need to seek a successful and ambitious conclusion to the Doha Development Agenda by the end of 2006. There was also an agreement to strengthening efforts to reduce barriers to transatlantic trade and investments.

In addition to the above mentioned free-trade initiatives the EU and China are in dialogue to liberalise trade. As testament to China's continued growth, integration, and increasing importance in world markets, EU and China will likely intensify efforts to tighten trade relations and economic cooperation.

What is an FTA?

A *Free Trade Area* is an agreement that grants each participant country/region free access to its partners' markets but maintains sovereign trade policy towards non-participants. This differs from a preferential trading arrangement under which partner countries impose lower tariffs on imports from each other than on imports from the outside world. The so-called *customs union* goes a step deeper than a free trade area.

A *customs union* is an FTA with a common trade policy towards non-participants. *An economic union* involves a common market and in addition common economic policies. These different degrees of economic integration are not necessarily sequential steps and the taxonomy does not precisely fit actual arrangements.

Many current FTAs seek to address two classes of trade barriers: 1) "at-the-border" issues (tariffs, customs duties, tariff rate quotas), and 2) "behind-the-border" issues (transparency, legal protection, intellectual property rights, etc.). Many of these FTAs build on WTO commitments and include issues that are not yet covered by the WTO disciplines.

Free Trade Agreements (FTA) and Customs Unions (CU) (together defined as Regional Trade Agreements (RTA)) together comprise the principal exceptions to the Most-Favoured-Nation (MFN) principle of the Multilateral trade system. This exception is allowed under Article XXIV of the General Agreement on Tariffs and Trade (GATT) for trade in goods and under Article V of the General Agreement on Trade in Services (GATS) for trade in services, and in the Enabling Clause.

Article XXIV provides conditions under which the WTO members may form customs unions and free trade areas. The three main conditions are:

- Trade barriers facing non-members must not 'on the whole' be higher than those previously in effect
- Trade barriers must be eliminated on 'substantially all' trade among members and
- Interim arrangements to permit scheduling the customs union or free trade area must be completed over a reasonable period of time.

… And what are their consequences?

An obvious question is whether or not free trade areas improve welfare, and economic theory allows for affirmative and negative answers. Regional trade liberalisation leads to welfare enhancing trade *creation* as well as trade *diversion*, which adversely affect welfare (Viners well-known concepts). Which of these effects dominate is an empirical question.

Traditionally, gains from trade have been most apparent in free trade agreements where the participating partners have very different economic structures. Comparative

advantages in different production activities allow partner countries to gain as a result of specialisation through *trade creation*. A refinement of this analysis (the so-called Heckscher-Ohlin model) illustrates how trade leads to higher prices of the cheaper good in each of the participating partners while lowering the prices of the scarcer (imported) good to more than offset this. This view of the gains from trade has been the core argument for entering free trade agreements for many years.

More recent arguments that complement traditional trade-gain theory comprise trade benefits of a different form, namely gains that can be realised by countries with similarly structured regions. The gains emerge from intra-industry trade, where the trading partners appear to be buying and selling identical goods.

Several factors explain these gains, namely a) increased competitive pressures on suppliers that, prior to the FTA, were less challenged in their home markets, and b) increased specialisation of production and the increased number of stages through which materials are transformed prior to reaching the final consumer (increased scale economies).

FTA's can indeed elicit free trade, and if adopted efficiently[4], can provide welfare gains from trade expansion to the participating countries. However, by providing mutually preferential trading rules relative to non-members, FTA participants discriminate against non-participants. Non-members may experience lost export opportunities as products are sourced from members of the FTA, and they may lose FDI opportunities as investments are diverted to members having preferential access to the larger market.

Preferential trade agreements can lead to the diversion of trade among their partners if imports from an economically inefficient regional trade agreement partner displace more competitive imports produced elsewhere. Such increased trade actually reduces the partner countries overall efficiency (trade diversion).

[4] Many existing FTAs, however, seem to allow exceptions or restrictions on trade in sensitive products, i.e. the agreements do not lead to totally free trade among the members limiting the benefits through trade of establishing such free trade areas. An analysis of the content of seven US bilateral agreements illustrate that often FTA's lead to less liberalisation in 'politically sensitive' sectors where the terms of trade has deteriorated - and may continue to - and where protectionism lobbies are strong, cf. Kerr and Hobbs (2006). It is concluded that the examination of US regional / bilateral trade agreements shows them to be a 'mixed bag' and that there is no strong evidence to suggest that they are mechanisms that will lead to trade liberalisation.

The net balance of the trade creation and diversion impacts, and therefore the calculation of the gains from establishing a free trade area, depend on:

- Size and extent of *trade barriers* prior to entering the free trade agreement;
- *trade shares* of each country as a trading partner in a liberalised trade situation;
- the degree to which the effect of removal of barriers to trade between members results in more or less *access overall* by trading partners into the free trade area; and
- the degree to which *trade diversion* occurs, i.e. to what extent a reduction in trade barriers between the partner countries causes industries to expand that are relatively high cost on a global scale;

In addition, dynamic gains from increased competition and realised gains from increased scale economies might result from establishing an FTA. These gains arise from (World Bank 2002):

- *Investment.* As tariffs are often imposed on investment goods, a reduction in trade barriers on these goods can lead to an increase in the return to capital and therefore a rise in real investment and productivity. Higher incomes from increased productivity lead to higher savings and thus further capital accumulation.
- *Competitive effects and scale economies.* An increase in foreign competition can reduce the market power of domestic firms leading to lower domestic mark-ups. In addition, the ability to increase market size through greater exports allows domestic firms to reduce their average cost through use of more specialised equipment and bulk-handling methods, thereby increasing productivity.
- *Endogenous productivity.* Only relatively productive foreign firms will expand into a domestic market with possible positive spill over to local firms through introduction of new technologies, innovations, and production methods into the domestic market thereby enhancing domestic firm productivity.
- *Endogenous capital flows.* Gains from international capital mobility can be important and foreign direct investment may bring new and improved technologies that could flow into the domestic economy and increase market productivity.

The issues of regionalism are even more complex as there is a need also to take into account the interaction between the different regional blocs and arrangements, as well as the possible strategic aspects of entering such preferential trade agreements. In addition, the analysis needs to account for the interaction between industries, commodity regimes, changes in the policies and regulations dealing with services and investments within the relevant regional blocs. The actual implementation of such free trade areas will of course also impact the overall consequences of such trade arrangements. Finally, the issues of redistribution of tariff revenues for countries with an initial set of tariffs to the other members with lower tariffs needs to be taken into account.

Regional trade agreements are clearly complex, and economic theory is useful in identifying their impacts. Yet because discriminatory policies, by their very nature, exclude conditions of a global free trade optimum, theory does not provide conclusive answers concerning net FTA benefits in a tariff-ridden world. Empirical studies, which also take into account the most important interactions within and between trading regions, are necessary to evaluate the welfare implications of any specific trade deal.

2. Effects of FTAs involving at-the-border liberalisation

To provide a more concrete basis for discussing benefits of FTAs, relative to those of multilateral agreements, we present a numerical analysis of the effects of EU FTAs with USA, Russia and China, and compare them with a multilateral Doha round scenario. In this numerical simulation, we adopt a very simple representation of an FTA focusing on at-the-border liberalisation. We ignore behind-the-border issues, such as harmonisation of regulatory barriers, establishment of rules for government procurement, and liberalisation of Foreign Direct Investment. Similarly, the Doha scenario includes liberalisation of agricultural trade and Non-Agricultural Market Access (NAMA) and makes no changes in behind-the-border policies, such as domestic agricultural support or trade facilitation. Also, we exclude productivity gains arising from realisation of scale economies and technological spill over effects.

Model

We carry out the trade policy simulations using the economic model and database created by the Global Trade Analysis Project (GTAP) (Hertel, 1997, Dimaranan et al, 2005). The GTAP model is a standard multi-regional, static computable general equilibrium (CGE) model with a strong neoclassical foundation. Regional production is generated by a constant return to scale technology in a perfectly competitive environment, and consumer demand is represented by a non-homothetic[5] demand system (the Constant Difference Elasticity function). The foreign trade structure is characterised by the Armington assumption implying imperfect substitutability between domestic and foreign goods. The model uses a global primary factor price index as the numeraire.

We take a long run perspective, which affects our assumptions regarding labour market clearance and capital accumulation. Whereas the simulated policy changes may affect the sectoral employment of labour, the time horizon is long enough for the wage rate to adjust to leave the total number of people in employment unchanged. The quantities of most resource endowments, such as land, labour and natural resources, are fixed, but capital accumulates with net investments. Investments are endogenous and adjust to accommodate any changes in savings. This takes place at the global level and investments are then allocated across regions to equalise the marginal rate of return in all regions. Although global investments and savings must be equal,

[5] Non-homothetic means that the composition of demand changes with the size of income. For instance, households may spend a smaller share of their income on food as they grow richer.

this does not apply at the regional level, where the trade balance is endogenously determined as the difference between regional savings and regional investments. This is valid as regional savings enter the regional utility function representing the value of future consumption.

Accounting for capital accumulation, the so-called *Baldwin long run comparative static* closure (Francois et. al. 1996), is a departure from the standard GTAP closure, which assumes a time horizon too short for new investments to enter productive use. While the Baldwin closure captures important dynamic consequences of trade policy reform, it also introduces a new modelling challenge. GTAP does not trace factor income flows across borders (such as capital returns from foreign investments, remittances for labour stationed abroad, or development aid). In the standard closure, this is not a problem since none of these income flows are assumed to be affected by the policy shocks. However, with the Baldwin closure the model is failing to account for the income flows attributed to policy-induced changes in foreign investments.

Unfortunately, no fully satisfactory method has yet been developed to explicitly model these income flows in the static GTAP model.[6] One common way of "solving" the problem is fixing the trade balance exogenously, essentially forcing investors to place all savings in the home country and thereby eliminating the need to account for cross-border income flows (Walmsley, 1998). However, this method severely restricts households' ability to adjust to trade policy shocks and may distort the results even more. In this paper we chose to allow foreign investments and leave the trade balance endogenous. The results indicate that most savings are invested at home and that foreign investments are relatively small. While we acknowledge that the reported welfare impacts may be slightly biased, the discussions and conclusions presented in the paper remain valid.

We have modified the standard GTAP model to accommodate agricultural trade policy analysis in the EU context. Numerous policy features of the Common Agricultural Policy (CAP) have been refined, including common EU financing of agricultural support, milk and sugar production quotas, etc.[7] Furthermore, we have updated the database with the latest changes in EU agricultural policy as detailed below.

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[6] The dynamic version of the GTAP model explicitly models cross-border income flows, but unfortunately it does not yet possess the institutional detail (e.g. with respect to the Common Agricultural Policy) exhibited by the static GTAP model used in this paper.

[7] For more detailed discussion of the many changes to the standard GTAP model, readers are encouraged to read a series of working papers published by the Institute of Food and Resource Eco-

Data

We use an updated version of the most recent GTAP database (version 6) based on the year 2001. The database combines detailed bilateral trade, transport and protection data characterising economic linkages among regions with individual country input-output tables, which account for intersectoral linkages within regions. The database contains 96 regions and 57 sectors, which are aggregated to 30 regions and 38 sectors to keep the model within computational limits and focused on the individual member countries of the EU. The GTAP database includes tariff data from Market Access Maps (MAcMap) contributed by the Centre d'Etudes Prospectives et d'Information Internationales (CEPII). The MAcMap database is compiled from UNCTAD TRAINS data, country notifications to the WTO, AMAD, and from national customs information and combines trade-weighted preferential ad valorem tariffs with the ad valorem equivalents of specific tariffs.

Before simulating the trade policy scenarios, we construct a baseline scenario to serve as an updated basis for analysis. The baseline scenario updates the standard database with a projection of the world economy from 2001 to 2015, applying suitable shocks to GDP, population, labour and capital, as well as incorporating the most important developments, realised or planned, since 2001. We have identified and updated the database with the following developments:

- the Agenda 2000 and the Mid-Term Review reforms of the CAP;
- the abolishment of export quotas on textiles and apparel shipped to the EU and the US;
- the accession of China to the WTO;
- the final implementation of the Uruguay Round commitments for developing countries;
- the enlargement of the EU with 10 new member countries and the extension of the EFTA with Switzerland, Norway, Iceland and Liechtenstein to include the 10 new member countries; and
- the Everything But Arms (EBA) agreement between LDCs and the EU.

Box 1 summarises the baseline scenario.

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nomics, Copenhagen, Denmark on reforms of the CAP and trade liberalizations under the WTO. These papers can be downloaded from www.foi.dk or can be obtained from the authors of this paper.

Box 1. Assumptions shaping the baseline 2001-2015

Projections
Shocks to GDP, factor endowments and population
Total factor productivity endogenously determined

Trade Policy changes
Abolishment of export quotas on textiles and apparel shipped to the EU and the USA
Final implementation of the UR commitments for developing countries
Accession of China to the WTO
Enlargement of the EU and the extension of the EFTA to include ten new member countries
EBA agreement between LDCs and the EU

EU Agenda 2000 and MTR Reform
All direct payments deflated by 2 per cent per year (max budgetary outlays fixed in nominal terms)
Hectare and livestock premiums (direct payments) and milk quota adjusted according to reform
Decoupling of direct payments to a single farm payment
Sugar quota unchanged

USA agricultural subsidies
Agricultural expenditure fixed in nominal terms at its 2001 level

Scenarios

In each FTA scenario, we eliminate all bilateral import tariffs and export subsidies/taxes between the EU and the FTA partner. In the Doha scenario, we abolish all export subsidies between WTO members and apply different formulae (the tiered formula for agriculture and the Swiss formula for NAMA-products) to determine tariff reduction schedules for each country.[8] Appendix A provides details of the rules used to determine Doha scenario tariff reductions. In all FTA scenarios, we abstract from any considerations of special sensitive products demanding exemptions from tariff elimination in order to focus on the potential impacts of the FTAs. To provide for an equal basis for comparison, we also rule out any exemptions in the Doha scenario.

[8] The tariff reduction formulae are applied to bound tariffs at the 6 digit Harmonised System (HS6) level of aggregation. Applied tariffs are reduced only to the extent that initial tariffs are higher than the new bound level. Hence, we fully account for any binding overhang in the tariff schedules.

Table 1 presents the shocks applied to the model under the four scenarios. To provide an overview of the scenarios, the table aggregates 38 economic sectors into three, agriculture and food production, manufacturing and services. Tables covering the shocks to all 38 sectors are provided in appendix B (tables B1 – B4). The first three columns show how the policy scenarios affect EU exports.[9] Considering the US FTA as an illustration, abolishing all EU export subsidies translates into 1.9 percent reduction in trade weighted average agricultural subsidies. This is combined with an elimination of US import tariffs, corresponding to a 2.5 percent decline in trade weighted average agricultural tariffs. However, these shocks only affect EU exports to USA, which takes 17.3 percent of total EU agriculture exports. The last three columns similarly present the shocks affecting EU imports; the change in US export subsidies, the change in EU import tariffs and the share of total import sourced from USA.

Table 1 Overview over policy scenarios from an EU perspective (percent)

	EU Export			EU Import		
	Δ EU exp. subsidy	Δ Partner tariff	Sh. of exp. to partner	Δ Partner exp. subs.	Δ EU tariff	Sh. of imp. fr. partner
US FTA						
Agriculture and food	-1.9	-2.5	17.3	-0.5	-7.7	16.1
Manufacturing	0.0	-1.7	26.2	0.0	-1.7	18.5
Services	0.0	0.0	30.1	0.0	0.0	30.5
Russian FTA						
Agriculture and food	-4.5	-11.5	6.3	0.0	-7.1	1.9
Manufacturing	0.0	-9.7	3.4	8.2	-0.9	5.6
Services	0.0	-0.1	3.4	0.0	0.0	0.9
Chinese FTA						
Agriculture and food	-1.7	-6.0	7.7	0.0	-10.1	2.5
Manufacturing	0.0	-4.7	8.0	0.0	-3.7	20.5
Services	0.0	0.0	9.3	0.0	0.0	10.6
Doha Scenario						
Agriculture and food	-3.2	-2.1	100.0	-0.4	-3.0	100.0
Manufacturing	0.0	-1.3	100.0	0.0	-0.7	100.0
Services	0.0	0.0	100.0	0.0	0.0	100.0

Table 1 gives an indication of the likely outcomes of the simulation exercise. In areas, where large changes in tariffs and subsidies are combined with relatively large share of total trade, we may expect substantial impact on EU trade. We see from the export and import shares that the US is generally the EU's most important trade partner of the three prospective FTA countries. However, the improvements in market access

[9] Unless otherwise noted, we always treat the EU as a single region, disregarding intra-EU trade. So, export and import shares in table 1 are measured relative to EU external trade only.

obtained by EU exporters are relatively modest (because initial tariffs are lower). For instance in agriculture, the US FTA abolishes an average import tariff of 2.5 percent, while a Russian FTA would eliminate agricultural tariffs amounting to 11.5 percent on average. On the other hand, US agricultural exporters to the EU face a substantial decline in tariffs of 7.7 percent. The US FTA is therefore expected to put pressure on EU agricultural producers by increasing import competition without generating large opportunities for export expansions.

The Russian FTA produces substantial market liberalisation for EU agricultural and manufacturing producers, although initial trade is relatively small. Of special interest is the 8.2 percent increase in Russian "subsidisation" of manufacturing exports, representing elimination of export taxes. The export taxes are essentially transfers from EU consumers to the Russian treasury. Abolishing these taxes will serve to increase EU imports of manufacturers, but at the same time represent a transfer of resources from Russia to the EU in the shape of cheaper imports.

China is the most important source of EU manufacturing imports of the three countries, surpassing even the USA. Further, elimination of EU import tariffs has a larger impact on Chinese trade, representing an average tariff cut of 3.7 percent, due to the composition of imports from China. As detailed in appendix B, a major part of imports from China is in textiles and wearing apparel, which face a relatively high EU import tariff. We would therefore expect the Chinese FTA to produce a large increase in manufacturing (particularly textile) imports from China.

Table 1 demonstrates one major advantage of FTAs over a multilateral Doha agreement. Under FTAs, it is typically possible to obtain more substantial market access liberalisations than in a multilateral deal, where more participants have to come to a unanimous agreement. On the other hand, the table also demonstrates one major weakness: FTAs only affect a small proportion of trade, possibly diluting the impact of substantial liberalisation efforts.

3. Results

Consequences for the EU economy

Overview

Table 2 provides a brief summary of the consequences of the three FTAs as well as the multilateral Doha agreement for the EU economy. Appendix B (tables B5 – B8) provides more detailed accounts of changes in welfare, trade and production at a sectoral level (tables C1 – C4 in appendix C isolate the Danish economy). All three FTAs yield positive, albeit in this static framework fairly modest, welfare gains to the EU. While the welfare gains in the US and Chinese FTAs are estimated at around US$ 3 - 5 bn. corresponding to a 0.04 – 0.06 percent increase in real GDP, the potential gains from a Russian FTA are much higher – about US$ 13 bn or 0.12 percent real GDP increase. Welfare gains from a multilateral deal is almost US$ 8 bn (0.07 percent increase in real GDP), higher than those from the US and Chinese FTAs, but substantially lower than that from a Russian FTA.

Table 2 Consequences for EU economy

	US FTA	Russian FTA	Chinese FTA	Doha
Total Welfare (million US$)	**3,490**	**13,433**	**4,581**	**7,672**
Allocative efficiency	1,288	3,811	1,685	4,722
Capital accumulation	1,852	5,455	3,243	1,316
Terms of Trade	350	4,167	-346	1,633
Real GDP (%)	**0.04**	**0.12**	**0.06**	**0.07**
Production (%)	**0.03**	**0.10**	**0.07**	**0.03**
Agriculture	-0.43	0.08	0.09	-1.32
Manufacturing	0.17	0.12	0.13	0.28
Services	0.01	0.09	0.04	0.06
Export (%)	**1.76**	**0.92**	**2.14**	**2.61**
Agriculture	1.37	2.24	0.13	-0.34
Manufacturing	2.72	1.44	3.14	4.47
Services	-0.20	-0.43	-0.02	0.28
Import (%)	**1.68**	**1.28**	**2.01**	**2.80**
Agriculture	8.17	3.14	2.07	12.35
Manufacturing	1.92	1.53	2.83	3.37
Services	0.17	0.44	0.13	0.10
Gross Factor Income (%)	**0.02**	**0.16**	**0.02**	**0.09**
Skilled labour	0.04	0.22	0.08	0.15
Unskilled labour	0.05	0.23	0.05	0.08
Capital	0.01	0.11	-0.03	0.08
Land	-0.61	0.33	0.23	-2.88
Natural Resources	-0.35	-2.53	0.44	1.96

Total welfare gains are decomposed into contributions from improvements in allocative efficiency, capital accumulation and terms of trade. Gains from *allocative efficiency* arise from improved reallocation of productive resources (such as labour, capital and land) from less to more productive uses. For instance, when import tariffs are abolished, resources shift from previously protected industries towards other sectors, which are more in line with the country's comparative advantage, producing an increase in economic welfare.

Terms of trade effects are consequences of changing export and import prices facing a country. So, when a country experiences an increase in its export price relative to its import price (e.g. due to improved market access), it may finance a larger quantity of imports with the same quantity of exports, thus expanding the supply of products available to the country's consumers. Whereas allocative efficiency contributes to increases in global welfare gains, the terms of trade affects the distribution of global welfare gains across countries; essentially, one country's terms of trade gain is another country's terms of trade loss.

Capital accumulation summarises the welfare consequences of changes in the stock of capital due to changes in net investment. In the discussion of the simulation results, we will distinguish between the *initial static* welfare effect, comprising allocative efficiency and terms of trade, and the capital accumulation effect. As discussed above, a policy shock affects an economy's allocative efficiency and terms of trade, generating an increase or a reduction in income and welfare. This initial static welfare effect often shows the direction of the capital accumulation effect. If a trade agreement has a positive effect on income, through improvements in efficiency and/or terms of trade, a part of that extra income will be saved by households, making possible an expansion in the capital stock. At the same time, rising income will increase demand for produced goods, pushing up factor returns and thus attracting more investments. Generally, economies that are gaining the most from the trade agreement will be prepared to pay the largest rate of return on capital, and will get most of the new investments.[10] Therefore, we will tend to see that the welfare gains from capital accumulation reinforce the benefits deriving from allocative efficiency and terms of trade.

[10] The income expansion caused by the increase in the capital stock will by itself contribute to further capital accumulation and income growth. However, due to diminishing returns to scale (given the stock of other primary factors), the increase in production and income will become smaller and smaller and the economy will eventually reach a steady state as gross investment equals capital depreciation.

From an overall EU perspective, a Russian FTA seems a lot more attractive than a US or Chinese FTA and it yields more economic welfare than a multilateral agreement. However, a large proportion of the benefits is derived from terms of trade effects, implying massive transfers to the EU from the rest of the world (we discuss the worldwide impacts of the FTAs below). In contrast, the US and Chinese FTAs as well as the Doha round scenario are more dependent upon allocative efficiency effects, benefiting the EU without corresponding losses to the rest of the world.

In the three FTA scenarios, the welfare gains from capital accumulation dwarfs the initial static gains from allocative efficiency. The Russian FTA provides a large boost to welfare through capital accumulation, but relative to the initial static welfare effects the Chinese FTA actually seems to be more effective in generating investments. Whereas the capital accumulation effect in the Russian FTA is smaller (around US$ 5.5 bn.) than the combined allocative efficiency and terms of trade effects (about US$ 8 bn.), the Chinese FTA provides a welfare gain from capital accumulation (US$ 3.2 bn), which is more than double the initial static expansion (US$ 1.3 bn.). The reason can be found in a large Chinese savings rate (in the GTAP database, China saves 37% of her income – the highest rate of any region in the simulation). With the Chinese FTA generating gains for China, a relatively large proportion of global income is saved, boosting investments and producing an expansion in the global stock of capital. In contrast, the US and Russian FTAs benefit economies, which exhibit relatively low savings rates, and the agreements do not generate any new capital but merely affect a redistribution of capital to the FTA partners from the rest of the world.

Compared with the FTAs, the capital accumulation gains accruing to the EU from a Doha round agreement are relatively modest. This pattern reflects the geographically limited scope of bilateral compared to multilateral agreements. In bilateral agreements, only the few participating countries experience the growth in income, demand and returns to capital, leading to inflow of new investments. In contrast, with a multilateral agreement a larger number of countries are positively affected and the EU faces greater competition for capital investment. Although the EU generally gains from a multilateral agreement, other regions, particularly in South East Asia, are expected to benefit even more, providing a more attractive destination for investments.

Apart from large differences in the potential size of the welfare gains, the three FTAs impact the EU economy in different ways. In the following, we briefly draw main

conclusions from each of the FTAs. As the Doha round has been extensively analysed in the literature, we will not go into a detailed analysis of this scenario.

The EU-US FTA

The EU-US FTA results in a shift of resources from agricultural and food production towards manufacturing. As EU tariffs on imports from the US are eliminated, American access to European food markets is greatly improved for a wide range of products. US food producers manage to greatly expand exports into the EU, particularly meat products (bovine and other meats) and the residual commodity, Other Food Products (table B5 in the appendix show the change in export and import from/to all sources/destinations). The opposite, however, is not true. Although US tariffs on EU agricultural exports are also abolished, they are relatively small in comparison and are outweighed for many commodities by the simultaneous elimination of sizeable EU export subsidies. In effect, EU imports of agricultural products increase by around 8.2 percent while agricultural exports expand by only 1.4 percent. The sharper competition on EU agricultural markets leads to contraction of total agricultural production of 0.4 percent. In value terms the largest declines are seen in the meat products and other food products sectors. However in relative terms, rice production takes the largest hit, showing a 9.2 percent decline in processed rice production and a massive 27.4 percent drop in paddy rice output.

In manufacturing, the outlook is better. Manufacturing production increases by 0.2 percent to meet an expansion in manufacturing exports of 2.7 percent. The growth in manufacturing imports is lower at 1.9 percent. The FTA eliminates relatively high US tariffs on the three clothing sectors, textiles, wearing apparel and leather products. Most EU members have fairly insignificant clothing exports to the US. However, Italy, accounting for almost 50 percent of all EUs exports of clothing to the US, gains tremendously from the increased market access. Due to the US tariff eliminations, exporting clothes has become a relatively cheaper way for Italy to finance her imports compared to other exporting sectors. As the Italian clothing industry expands production to meet the increasing export demand, it draws resources (in terms of capital and labour) away from other sectors. This causes a decline in the supply pushing up prices (export as well as domestic). As a result, the overall level of export prices increase, while import prices are more or less unchanged, yielding a considerable terms of trade effect for the Italian economy (see also table 3 below). Italy accounts for almost half of EUs total welfare gains. Similar stories may be told on German exports of motor vehicles and parts, and Irish export on chemicals, rubber and plastics.

The EU-Russian FTA

The major gain for the EU of the Russian FTA comes from cheaper access to natural resources and processed petroleum and coal products (see table B6 in appendix B). Natural resources is an aggregate commodity consisting of non-processed raw materials such as oil, gas, coal, minerals and forestry. Almost half (47 percent) of EUs imports from Russia consists of natural resources and another 16 percent is in petroleum and coal products. Under the FTA, Russia abolishes export taxes of 9.4 percent on natural resources and 9.5 percent on petroleum and coal products considerably lowering the import prices paid by the EU. Total EU imports of petroleum and coal products increase by almost 10 percent, lowering EU domestic prices to the benefit of the European consumers. While the growth in total EU imports of natural resources from all sources is relatively modest (US$ 967 million corresponding to 2.9 percent), there is a major shift in the sourcing of this import. Imports of natural resources from Russia increase by a massive US$ 9.8 bn. (about 48 percent), while imports from other sources decline by just over US$ 8.8 bn. (9 percent). Substituting a sizeable part of natural resources imports with cheaper sources generates large terms of trade gains to the EU.

Although liberalisation of trade in natural resources and petroleum and coal products provide the bulk of EU welfare gains, the FTA provide benefits in a broad range of manufacturing sectors. As Russia has not yet joined the WTO, her manufacturing trade is still highly regulated compared to other industrial countries, with import tariffs ranging from 5 percent to 19 percent (in wearing apparel) and export taxes around 5 percent in many sectors (see table B2 in appendix B). Eliminating these distortions improve market access for EU firms allowing them to expand exports and raise export prices, and reduce import prices for the benefit of EU consumers. The result is large terms of trade benefits for the EU, however, with corresponding Russian terms of trade losses.

In agriculture, we see the largest changes in the trade of processed meat products. The European bovine meat producers are protected by high import tariffs (almost 84 percent) and supported by generous export subsidies (around 46 percent). The FTA eliminates both of these in the trade with Russia, reducing total exports of bovine meats by 17 percent (US$ 186 million) and increasing imports by 48 percent (US$ 781 million). For other meat products (includes pork and poultry), the Russian FTA opens up for increased export opportunities as relatively large Russian tariffs (of almost 19 percent) are abolished, eliciting a 16 percent (US$ 910 million) expansion in total exports. Although high EU tariffs (19 percent) are also eliminated, Russia is not

a strong exporter of other meats, and the 7.6 percent (US$ 74 million) increase in total imports is relatively modest. As a result of these shifts in trade, EU production of bovine meat declines by almost US$ 1.2 bn. (almost 2%), while production of other meat products expands by around US$ 1 bn. (1%).

The EU-Chinese FTA

The major part of EUs welfare gain from the Chinese FTA is derived from freeing up trade in broad range of manufacturing sectors (see table B7 in appendix B), particularly the 'heavy' industries, including chemicals, motor vehicles and other machinery and equipment. Elimination of high Chinese import tariffs in these industries yield improved market access for EU firms, allowing them to expand export and production. Liberalisation of trade in electronic equipment is also a notable source of welfare increase, not because tariffs are particularly high, but due to a significant bilateral trade in such products. In value terms, the increase in electronic imports is twice as large as the expansion of exports, and the sector experiences a minor drop in production. Consumers, however, benefit from greater access cheaper electronics.

The major loser of the Chinese FTA is the European wearing apparel industry. This sector is highly protected by import tariffs, not only in the EU but also on the Chinese side. Eliminating the tariffs results in considerable expansion in EU imports (12.5 percent in textiles and 15.5 percent in wearing apparel), but also an increase in EU exports (around 10 percent in both sectors). The cheap Chinese textiles and wearing apparel displace a part of the EU production from the European markets, forcing EU producers to find alternative export markets putting a downward pressure on export prices. The clothing industries are partially helped by lower costs of imported intermediate inputs and improved access to Chinese markets. However, the losses to the industry from fiercer import competition by far outweigh the gains from opened export opportunities and EU production of textiles and wearing apparel declines by 5.1 and 7.3 percent respectively. Although liberalisation of trade in clothing enhances efficiency and provide cheaper products for European consumers, the decline in profitability in the EU clothing industries reduces capital investment (i.e. negative capital accumulation) and, hence, income generating capacity in the sector.

Consequences for individual EU members

Table 3 distributes combined EU welfare effects on individual member countries/regions.[11] It decomposes total welfare effects into allocative efficiency, capital accumulation, terms of trade and effects of intra-EU transfers due to the Common Agricultural Policy.

It is not surprising that most EU members derive the largest welfare gains from the Russian FTA, which yields the largest combined economic benefit. However, there are exceptions, notably Ireland, UK, Sweden, and Denmark, which are less dependent on Russian supplies of natural resources and consequently reap smaller terms of trade benefits from lower import prices.

The US FTA improves the allocative efficiency of all EU members as previously protected industries face sharpened competition from US imports. However, the terms of trade effects exhibit greater variety across members, with Italy, Germany and Ireland being the main winners and Belgium/Luxemburg and the Netherlands the main losers. This variety is a result of differences in the composition of exports to USA. Facing increasing imports as the EU liberalise their markets, EU producers need to lower their domestic prices in order to stay competitive, or channel their excess supply towards other markets. The terms of trade winners find it relatively easy to expand exports to USA. As mentioned above, Italy benefits from a focus on exports of textiles, wearing apparel and leather goods, which enjoy relatively large improvements in market access. The same is the case for Germany in motor vehicles and parts and for Ireland in chemicals, rubber and plastic. In contrast, the terms of trade losers focus on relatively less protected US markets and therefore do not experience large improvements in export market access. Therefore, they have to lower their export prices in order to raise exports.

The same mechanisms drive the results in the Chinese FTA. Overall, the EU experiences negative terms of trade effects, as the improved access to EU markets, particularly in textiles, wearing apparel and electronics, achieved by Chinese firms are more valuable than that enjoyed by EU producers to Chinese markets. However, there are a few exceptions, notably Germany and Sweden in the paper industry, motor vehicles and parts and other machinery. A few members actually lose from the Chinese FTA, including some of the Mediterranean and East European members.

[11] Due to computational limitations, Belgium and Luxemburg as well as Cyprus and Malta, have been aggregated into two regions.

Table 3 Welfare effects for EU members (million US$)

		USA FTA					Russian FTA					Chinese FTA			
	Total	Effic.	Capital	Tot	Transf.	**Total**	Effic.	Capital	Tot	Transf.	**Total**	Effic.	Capital	Tot	Transf.
Belgium/Luxemburg	**-31**	54	87	-170	-2	**449**	89	159	209	-7	**123**	44	172	-88	-5
Denmark	**-41**	7	-22	-25	-2	**60**	27	13	21	-2	**130**	49	62	25	-4
Germany	**828**	292	372	140	23	**3,191**	903	1,190	1,088	10	**1,989**	489	964	533	4
Greece	**15**	40	-13	-14	1	**176**	57	51	67	2	**-59**	18	-18	-60	0
Spain	**-34**	52	-81	-8	3	**539**	111	200	228	0	**60**	87	125	-155	3
France	**-5**	80	-44	-36	-4	**1,013**	569	147	277	21	**668**	150	534	-4	-12
Ireland	**515**	72	323	127	-7	**-44**	13	-41	-10	-6	**56**	21	47	-8	-4
Italy	**1,664**	302	847	539	-24	**2,694**	615	1,308	769	1	**382**	151	400	-175	5
Netherlands	**-84**	45	41	-188	18	**1,490**	484	724	287	-5	**263**	184	199	-127	8
Austria	**95**	47	63	-16	1	**293**	90	100	101	2	**209**	97	129	-19	2
Portugal	**87**	27	18	41	1	**77**	31	12	31	3	**-220**	-32	-64	-127	2
Finland	**19**	13	6	8	-9	**584**	146	236	207	-5	**285**	72	144	72	-3
Sweden	**127**	53	46	37	-9	**120**	77	18	22	4	**329**	73	123	133	-1
UK	**290**	88	218	-45	28	**-18**	90	-139	-7	38	**351**	182	329	-175	15
Cyprus/Malta	**10**	12	3	-2	-3	**21**	31	10	-21	2	**12**	7	8	-2	-2
Czech Republic	**-2**	11	4	-11	-6	**353**	45	219	94	-4	**2**	15	17	-26	-4
Hungary	**33**	17	25	-7	-2	**479**	97	253	134	-5	**45**	25	44	-23	-1
Poland	**-9**	50	-28	-32	1	**1,099**	216	543	372	-33	**60**	50	69	-57	-2
Slovakia	**15**	2	2	13	-1	**335**	53	188	93	0	**-14**	4	0	-18	-1
Slovenia	**-8**	2	-7	-1	-2	**42**	3	15	26	-2	**4**	3	9	-8	-1
Estonia	**1**	3	0	1	-2	**80**	11	41	32	-4	**-12**	1	-4	-8	-1
Latvia	**3**	16	-7	-7	1	**127**	2	74	53	-2	**-19**	1	-10	-9	0
Lithuania	**0**	2	-2	2	-2	**273**	50	136	95	-8	**-64**	-6	-37	-22	0
Total	**3,490**	1,288	1,852	350	0	**13,433**	3,811	5,455	4,167	0	**4,581**	1,685	3,243	-346	0

As mentioned above, the capital accumulation effects generally reinforce the initial static welfare gains from improved allocative efficiency and terms of trade. The regions, which benefit the most from these initial static gains (such as Italy and Germany in the US and Russian FTAs), are also the ones, which enjoy the highest rates of investment and vice versa. However, there are exceptions. Consider the UK as an illustration. She enjoys small, but positive initial static welfare gains in all three FTAs, the largest in the Russian FTA. However, while accumulating capital in the US and Chinese FTAs, the UK actually experiences net depreciation of capital in the Russian FTA.

There are two explanations: First, although the UK economy expands in all three scenarios, she still has to compete with other EU member for the available capital. Under the Russian FTA, other regions (notably Germany and Italy) grow more than the UK, and they are consequently able to pay a higher rate of return on capital attracting a larger part of available savings for investment. The second explanation involves relative price impacts of the trade agreements. Investors are assumed to place their savings where they earn the highest *real* return on capital. If prices on capital goods used in investments increase, the real return on capital declines and investors are encouraged to find more profitable investment opportunities abroad. In the case of the UK, the Russian FTA tends to increase the prices of commodities most extensively used for investment purposes (primarily services, but also machinery and motor vehicles) reducing the real return to capital and causing investment outflow. In the US and Chinese FTAs, the situation is reversed.

Worldwide impact of the FTAs

Table 4 presents the worldwide welfare impacts generated by the FTAs, and compares the three scenarios with the multilateral Doha agreement. There is no doubt that from a global perspective a multilateral agreement generates much more welfare than any individual FTA. While an FTA may facilitate greater liberalisation for the participants compared to a multilateral deal, most countries in the world are left out of the agreement and actually end up losing.

Table 4 Regional welfare effects (Million US$)

	US FTA	Russian FTA	Chinese FTA	Doha
EU	**3,490**	**13,433**	**4,581**	**7,672**
Allocative efficiency	1,288	3,811	1,685	4,722
Capital accumulation	1,852	5,455	3,243	1,316
Terms of Trade	350	4,167	-346	1,633
USA	**4,694**	**-3,421**	**-44**	**-5,503**
Allocative efficiency	16	1	-137	985
Capital accumulation	2,328	-3,259	593	-5,581
Terms of Trade	2,349	-164	-500	-907
Russia	**-220**	**-758**	**-46**	**-622**
Allocative efficiency	-36	316	-20	-266
Capital accumulation	-76	568	-7	-485
Terms of Trade	-108	-1,642	-19	129
China	**-1,288**	**-979**	**8,808**	**6,467**
Allocative efficiency	-149	-112	996	952
Capital accumulation	-691	-613	5,114	1,139
Terms of Trade	-448	-254	2,697	4,377
EFTA	**-342**	**-630**	**-46**	**1,163**
Allocative efficiency	-32	-33	-10	1,000
Capital accumulation	-180	-169	-23	-73
Terms of Trade	-130	-428	-13	237
Rest of Asia	**-3,413**	**-2,867**	**-2,372**	**64,471**
Allocative efficiency	-831	-356	-493	43,263
Capital accumulation	-1,995	-1,762	-687	26,370
Terms of Trade	-586	-749	-1,192	-5,163
Sub-Saharan Africa	**-236**	**-163**	**-151**	**2,362**
Allocative efficiency	-28	-9	-36	714
Capital accumulation	-104	-17	-43	1,035
Terms of Trade	-103	-137	-72	612
Rest of the World	**-5,385**	**-2,741**	**-1,588**	**11,017**
Allocative efficiency	-714	-382	-358	4,410
Capital accumulation	-3,345	-1,560	-667	7,557
Terms of Trade	-1,326	-799	-563	-950
Total	**-2,700**	**1,874**	**9,142**	**87,027**
Allocative efficiency	-486	3,236	1,627	55,780
Capital accumulation	-2,211	-1,356	7,522	31,279
Terms of Trade	-3	-6	-7	-32

While the EU gains moderately from the Chinese and US FTAs, the agreements are more beneficial to the FTA partners due to favourable terms of trade effects. The opposite is the case under the Russian FTA. Recall that the FTA abolishes large Russian taxes on exports to the EU, particularly on natural resources and petroleum and coal products, in effect transferring resources from the Russian treasury to EU consumers. This results in large terms of trade losses to Russia, which more than outweighs the

modest allocative efficiency gains. However, Russia is not the only country that has to pay for cheap EU imports. Lower import prices spur an increase in EU demand for Russian natural resources, raising her export prices to all destinations. As only the EU are exempted from Russian export taxes, the rest of Russia's main trading partners (mainly South Asia and China) face the full increase in import prices, generating negative terms of trade effects to those regions. Similarly, large suppliers of natural resources to the EU (primarily Sub-Saharan Africa and Rest of the World) face declining demand and export prices, and they too experience negative terms of trade losses.

Generally, every FTA produces welfare losses to all non-participating regions, in terms of allocative efficiency as well as terms of trade. Negative allocative efficiency effects occur because the shifts in participating countries' trade patterns indirectly affect the trade of the rest of the world as well. As an example, consider the effect of the US FTA on the Rest of Asia (i.e. Asia except China). A large proportion of the efficiency losses is attributed to the paddy rice sector. Paddy rice is a highly protected sector in the EU and liberalisation under the US FTA generate a considerable increase in EU imports of paddy rice from USA. When US rice producers realise that they gain better prices on the EU market they shift some of their exports away from Asia towards the EU. Thus, indirectly EU liberalisation towards the US reduces imports into the Asian paddy rice market, which is already protected by trade barriers. The decline in import competition encourages expansion of the protected paddy rice sector, thereby reducing the efficiency of resource allocation.

Many such stories exist. Countries that are not part of the FTA typically lose from the agreement, as they themselves are not liberalising their own economies, and as their access to export markets are worsened relative to FTA participants. In most cases, the short term losses are exacerbated by long term welfare reductions caused by net capital depreciation.

A welfare analysis of a Doha round agreement is not the focus of this paper, but the significant welfare losses to the US captures the attention and deserves a comment. The welfare losses are attributed to negative capital accumulation effects as net depreciation reduces the US stock of capital. Although, the US economy exhibits a very slight initial static expansion (the combined effect of allocative efficiency and terms of trade), this gain is insignificant relative to the growth in other regions of the world. Investors find particularly the Asian markets to be more lucrative destinations for investment, in effect causing an outflow of capital from the US. Once again, these re-

sults demonstrate that when accounting for capital accumulation effects, whether a country experiences initial static gains or losses relatively to other countries has important implications for overall welfare impacts of the policy shock.[12]

Sensitivity analysis

Like any other economic modelling exercise, the analyses in this paper are based on a number of assumptions representing the beliefs the analyst has regarding the workings of the economic system. It is important to recognise that results may change, if some of the assumptions turn out not to be valid. A full sensitivity analysis is beyond the scope of this paper, but in the following we will briefly discuss the implications for the results of varying one of the most important parameters in trade analysis, the so-called *Armington* elasticity.

The GTAP model (like most other applied trade models) is based on the assumption that commodities are differentiated by region of origin, in the sense that e.g. Russian wheat is assumed to be different from American wheat and they may command different prices in a given market. The Armington elasticity represents the degree of substitutability of commodities from different sources. If this parameter is large, commodities from different regions are considered close substitutes. The significance of the Armington elasticity in trade policy analysis relates to how trade flows adjust to policy shocks. As an example, suppose a trade policy reform reduced the price of Russian wheat relative to American wheat on the EU market. With a high Armington elasticity, the two commodities would be regarded as close substitutes, and we would expect a relatively large shift in demand from American wheat towards Russian wheat. To the extent that the EU carries any weight in the global market for wheat, this shift in demand would push up Russian prices and depress American prices. Generally, with high Armington elasticities we will expect to see large changes in trade flows and relatively small price changes, and vice versa.

It is important to recognise that the Armington specification is not a theoretically founded representation of commodity characteristics, but a modelling technique designed to capture empirically observed trade behaviour in applied models. In addition to commodity heterogeneity, Armington elasticities may represent inertia in consumption habits, resistance to changing contractual and institutional arrangements and

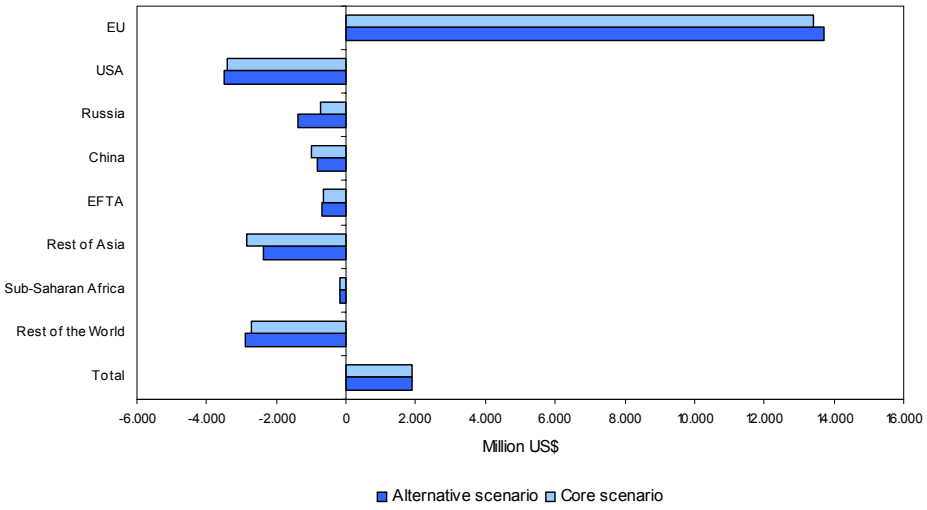
[12] It should be noted that the welfare implications are still insignificant relative to the US economy. For instance, the US$ 5.6 billion loss from capital depreciation represents a mere 0.13 percent decline in the US capital stock.

other types of trade friction. This also implies a time dimension. In the short term, importers and exporters tend to stick to their traditional trade partners, while in the longer term, if price changes persist, trade relations are expected to change as well. In fact, the empirical literature supports higher long-run than short-run Armington elasticities (McDaniel and Balistreri, 2002).

The analyses in this paper are based on standard GTAP parameters.[13] Particularly the Russian FTA scenario could be sensitive to variations in the Armington elasticities, as price changes in just a few commodities contribute a major part of welfare changes. Consequently, we carry out an alternative simulation of the Russian FTA, in which we double the Armington elasticities on the two key commodities, natural resources, and petroleum and coal products, implying that these commodities become more homogenous and that one source of imports is much easier substituted for another.[14] Figure 2 compares the welfare implications of the EU – Russian FTA in the core and alternative scenarios.

[13] The standard GTAP model and assumptions are documented in Dimaranan (2005).
[14] Even in the core scenario, the Armington elasticity for natural resources is higher than any other commodity, implying that natural resources are considered the more homogeneous commodity.

Figure 2. Regional welfare implications of EU – Russian FTA in the core and alternative scenarios



In terms of overall welfare effects, the doubling of Armington elasticities for natural resources and petroleum and coal products changes very little.[15] The EU gains slightly more, the Rest of Asia loses slightly less, but the biggest change is for Russia, which face a much larger decline in welfare. Recall that the elimination of Russian export taxes on natural resources under the FTA gives the EU access to cheaper import from Russia. With the doubling of the Armington elasticities, Russian natural resources are considered closer substitutes to natural resources from other sources, and there is an even greater shift in EU demand towards Russia. Since the EU now replaces a larger part of its natural resources consumption with cheap Russian imports, welfare increases more. Similarly, Russia supplies a larger quantity of natural resources "tax free" to the EU.

It may seem surprising that the EU stand to gain so much from gaining greater access to cheaper Russian natural resources, particularly in a globalised world, where trade

[15] Although not shown explicitly in figure 1, this also applies to the decomposition of the welfare effects into allocative efficiency, capital accumulation and terms of trade. The relative sizes of the three components are more or less unchanged.

in such basic commodities as oil and gas is supposedly conducted on the basis of a single world market price. However, the Armington specification asserts that a single world market price does not exist. Even basic commodities are not completely homogeneous (for instance, crude oil is differentiated by sulphuric content), and since transport costs weigh heavy in bulk commodity trade, import prices depend on the distance to the supplier. Furthermore, in this analysis natural resources encompass a range of unprocessed raw materials, including oil, gas, coal, minerals and timber, so as an aggregate commodity natural resources is not a homogeneous good. Consequently, we cannot expect import prices to be completely unaffected by trade shocks.

The present trade policy analysis simulates an elimination of a 9.4 percent Russian export tax. The shift in EU import sourcing raises demand for Russian natural resources and put an upward pressure on the price. Therefore, the trade shock does not imply a 9.4 percent drop in EUs import price. The source-specific price on EU imports of Russian natural resources decline by 5.5 percent (or by 4.8 percent in the alternative scenario with double armington elasticities). The average EU price on imports of natural resources from all sources decline by just 1.6 percent (in both scenarios). Even this small reduction in import prices produce significant terms of trade gains to the EU because it affects very large trade flows.

We conclude that the results for the Russian FTA provided in this paper are fairly robust to changes in one of the important assumptions, the Armington elasticity for natural resources and petroleum and coal products. Although we find large changes in the composition of trade flows into the EU, there is little change at the aggregate level and the conclusions and discussions presented in the paper remain valid.

4. Conclusion and discussion

Conclusions

We conclude that from an overall EU perspective the potential implementation of three bilateral FTAs with Russia, China, and the USA are indeed viable alternatives to the currently stalled multilateral Doha round. They all provide welfare gains to the EU, particularly the Russian FTA. However, benefits accruing to FTA participants are largely achieved at the expense of the rest of the world, and global welfare gains are insignificant compared to a multilateral deal. Clearly, from a global perspective, FTAs at best constitute a less desirable ”plan-B” or ”second best” option.

The numerical analysis shows that a Russian FTA is by far the most interesting of the three, seen from an overall economic and EU perspective, acknowledging that political considerations and concerns very often plays an important role in designing foreign Policy and trade policies. Elimination of Russian export taxes on natural resources (including oil and gas) and refined petroleum and coal products generates a substantial welfare benefit to the EU through cheaper import prices. An FTA with the US is likely to produce a shift in resources from agriculture to manufacturing, as relatively large EU agricultural tariffs are eliminated. The main beneficiaries are Italian textile producers and to a lesser extent the German motor vehicle industry and the Irish chemical industry, which all face improved access to US markets. Finally, a Chinese FTA is expected to generate a large inflow of cheap Chinese textiles to the benefit of EU consumers, but at the expense of the EU textile industry.

The simulations also show that a major part of the EU welfare gains are the long term gains arising from increasing investment and capital accumulation. A portion of the short term income gained from improvements in efficiency and/or terms of trade is saved and invested in productive capital. A multilateral Doha agreement generates more global savings for investment than any of the bilateral deals. However, the EU only manages to capture a modest proportion of new capital, as other regions, notably South Asia, experience higher growth and are consequently more attractive destination for investment. In contrast, under the bilateral agreements, the EU is able to accumulate more new capital. This is, however, at the expense of non-participating regions, which face net depreciation of capital.

Discussion

The strongest argument for the three bilateral agreements' implementation is that such bilateral options are the only politically feasible roads to trade liberalisation given the stalled Doha round, and superior for EU economies than no agreement at all. There is, however, reason to believe that full bilateral liberalisation could face some of the same difficulties plaguing multilateral negotiations.

The US FTA exhibits some of the same distributional patterns as the multilateral deal, albeit to a lesser extent, with EU consumers and manufacturing producers gaining at the expense of agricultural producers. In fact, when the idea of a transatlantic free trade zone was last aired in 1998, negotiations foundered on disagreements over agricultural tariffs (Financial Times, 2006). The Chinese FTA generates a large variation in gains across EU countries, and members are likely to have different views on whether to pursue such an agreement or maybe turn the political efforts in another direction. The risk is that in the negotiation process, internally in the EU as well externally with trade partners, pressure for exemptions and special flexibilities will emerge as they do in multilateral negotiations. This will only serve to diminish (or even reverse?) the impacts of trade liberalisation and make trade relationships even more complex.

As well, a set of bilateral agreements can facilitate the strategy, by a group of nations, to promote increased and liberalised economic and political integration via dismantling trade barriers on commodity/services trade, capital/labour movements, and investment flows. Nonetheless, while facilitators of such bilateral agreements often justify such agreements as providing a "mid-way bridge" to the ultimately desired goal of a multilateral agreement, the bilateral agreements have been criticized and/or questioned if they will ultimately foster the multilateral goals. As formulated by Bhagwati and Panagariya (1996):

> *"The claims in favour of PTAs are weak at best and specious and founded on unscientific assertions at worst, the principle reason to condemn the PTAs remains the classic argument for multilateralism: that it builds trade liberalisation on the foundation on non-discrimination".*

In any case, the interest and the number of bilateral FTAs are rapidly expanding, and such interest and actions have been clearly "fuelled" by the lack of success in the multilateral Doha Round.

A note on the Russian FTA

The analysis of the Russian FTA, producing large welfare benefits to the EU and significant welfare losses to Russia, may overestimate the impact. In the baseline scenario, Russia is not yet a member of WTO, although this is likely to happen with or without an EU-Russian FTA. We were unable to formulate Russian WTO membership as a part of the baseline scenario, as the conditions upon which Russia are likely to enter are not yet publicly available. However, Russian WTO membership is judged to substantially affect our results. For instance, the conditions are likely to involve the elimination of Russian export taxes, which are major drivers of results in the present analysis. A more detailed analysis of a possible Russian FTA should therefore seek to incorporate Russia's WTO accession into the baseline. This is, however, beyond the scope of the present paper.

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Appendix A: Doha round scenario

This appendix provides a brief overview over the rules applied to determine tariff reduction schedules in the Doha round scenario. Countries are divided into classifications, each with different reduction commitments. The country classification is given in table A1. Different rules are applied to agriculture and Non-Agricultural Market Access (NAMA).

Agriculture

The agriculture section of the scenario distinguishes between three groups of countries:

- **Least developed countries**: No reduction commitments

- **Developing countries** (also including paragraph 6 countries, small vulnerable economies, newly acceded member countries in table A1): Reductions in tariffs according to tiered formula:

Pre-Doha tariff	Reduction
0 – 30%	25%
30 – 80%	30%
80 – 130%	35%
130% +	40%

Post-Doha tariffs are capped at 150%.

- **Developed countries**: Reduction in tariffs according to tiered formula:

Pre-Doha tariff	Reduction
0 – 30%	35%
30 – 60%	45%
60 – 90%	50%
90% +	60%

Post-Doha tariffs are capped at 100% and least developed countries are given duty-free access

NAMA

The NAMA section of the scenario uses the country classification given in table A1:

- **Least developed countries**: No reduction commitments

- **Paragraph 6 countries**: Expected to bind 95% of tariff lines at an average level not exceeding 28.5 percent. Calculations have shown that this may be done without cutting any applied tariffs. Therefore, no reductions are made in the scenario.

- **Small vulnerable economies**: Expected to bind 95% of tariff lines at an average level not exceeding 22 percent. Calculations have shown that this may be done without cutting any applied tariffs. Therefore, no reductions are made in the scenario.

- **Newly acceded member countries**: Same reduction commitments as developing countries, except for Armenia, Moldova and Kyrgyz Republic, which make same commitments as paragraph 6 countries.

- **Developing countries**: Reducing tariffs using the simple Swiss formula, with a coefficient of 15. The formula is given as:

$$t_1 = \frac{15 \times t_0}{15 + t_0}$$

  where t_0 is the pre-Doha tariff and t_1 is the post-Doha tariff. This formula effectively imposes a maximum tariff of 15 percent.

- **Developed countries**: Reducing tariffs using the simple Swiss formula, with a coefficient of 10. The formula is given as:

$$t_1 = \frac{10 \times t_0}{10 + t_0}$$

  This formula effectively imposes a maximum tariff of 10 percent. Least developed countries are granted duty-free access to developed country markets.

Table A1 Countries classification in the Doha round scenario

LDC	Paragraph 6 countries Countries with less than 35 per-cent binding coverage	Small, Vulnerable Economies	Newly acceded Members from year 2000 Demanding exceptions	Developing countries	Developed countries
Angola	Cameroon	Antigua and Barbuda	Albania	Argentina	Australia
Bangladesh	Congo	Barbados	Armenia	Bahrain	Canada
Benin	Cote d'Ivoire	Belize	Croatia	Brazil	Island
Burkina Faso	Cuba	Bolivia	F. Yugoslav R. of Macedonia	Bulgaria	Japan
Burundi	Ghana	Botswana	Georgia	Chile	Liechtenstein
Cambodia	Kenya	Brunei Darusalam	Jordan	Colombia	New Zealand
Central African Rep	Macao	Costa Rica	Moldova	Korea	Norway
Chad	Mauritius	Congo Republic	Oman	Hong Kong	Switzerland
Congo	Nigeria	Dominica	Taiwan	India	USA
Dem. Rep. Congo	Sri Lanka	The Dominican Republic	Kyrgyz Republic	Indonesia	EU25
Djibouti	Suriname	Ecuador	China	Israel	
Gambia	Zimbabwe	El Salvador		Kuwait	
Guinea (Conakry)		Fiji		Malaysia	
Guinea Bissau		Gabon		Mexico	
Haiti		Grenada		Morocco	
Lesotho		Guatemala		Pakistan	
Madagascar		Guyana		Peru	
Malawi		Honduras		Philippines	
Maldives		Jamaica		Qatar	
Mali		Mongolia		Rumania	
Mauritania		Namibia		Singapore	
Mozambique		Nicaragua		South Africa	
Myanmar		Panama		Egypt	
Nepal		Papua New Guinea		Thailand	
Niger		Paraguay		Tunisia	
Rwanda		Saint Kitts and Nevis		Turkey	
Senegal		Saint Lucia		United Arab Emirates	
Sierra Leone		Saint Vincent Grenadines		Venezuela	
Solomon Isles		Swaziland			
Tanzania		Trinidad and Tobago			
Togo		Uruguay			
Uganda					
Zambia					

Appendix B: Detailed tables at sectoral level

Table B1 Initial subsidies and tariffs in EU-US bilateral trade (percent)

	EU export to USA			EU import from USA		
	EU Export Subs.	US Tariff	Sh. of export to USA	US Subsidy	EU Tariff	Sh. of import from US
Agriculture and food						
Rice	0.0	4.4	2.9	0.0	72.6	24.2
Wheat	3.4	2.8	0.1	6.6	1.2	33.2
Other cereal grains	24.4	0.0	7.9	6.6	9.2	17.8
Vegetables, fruit and nuts	2.3	2.8	13.0	0.0	4.4	13.0
Oil seeds	0.0	3.6	3.6	0.0	0.0	33.0
Sugar cane, beeds	0.0	0.2	8.5	0.0	60.7	0.0
Plant-based fibres	0.0	0.7	1.9	0.0	0.0	6.8
Other crops	0.0	2.2	18.5	0.0	11.3	17.2
Cattle, sheep, goats, horses	0.0	0.0	45.5	0.0	0.6	52.7
Other animals	0.7	0.4	5.6	0.0	1.3	18.5
Raw milk	0.0	0.0	14.3	0.0	0.0	0.2
Wool and silk	0.0	1.1	1.5	0.0	0.0	10.7
Bovine meat products	45.7	1.7	7.0	0.0	19.7	11.8
Other meat products	0.0	1.5	6.8	0.0	24.2	20.2
Vegetable oils and fats	0.0	1.4	19.4	0.0	5.1	7.7
Dairy products	14.9	20.0	7.4	14.4	31.3	11.9
Processed rice	33.6	7.1	6.2	0.0	93.5	11.5
Sugar	54.5	17.7	6.8	0.0	24.0	3.5
Other food products	3.2	5.4	11.7	0.0	15.2	11.3
Beverages and tobacco	0.9	1.5	36.4	0.0	9.9	23.7
Manufacturing						
Natural Resources	0.0	0.1	21.7	0.0	0.2	4.1
Textiles	0.0	7.6	12.8	0.0	6.0	2.7
Wearing Apparel	0.0	10.3	16.9	0.0	9.8	1.1
Leather products	0.0	7.4	23.2	0.0	4.7	2.5
Wood products	0.0	0.3	24.5	0.0	1.1	13.8
Paper and publishing	0.0	0.0	16.8	0.0	0.0	29.2
Petroleum and coal	0.0	1.9	7.6	0.0	0.8	3.7
Chemicals, rubber and plastics	0.0	2.1	30.4	0.0	2.7	34.6
Other Mineral products	0.0	5.5	25.3	0.0	3.4	30.2
Ferrous metals	0.0	0.2	20.7	0.0	0.8	5.3
Other metals	0.0	1.7	19.9	0.0	1.8	18.3
Metal products	0.0	2.6	18.2	0.0	2.6	17.4
Motor vehicles and parts	0.0	2.3	37.0	0.0	6.2	25.1
Other transport equipment	0.0	0.1	42.2	0.0	1.2	40.2
Electronic equipment	0.0	0.3	16.5	0.0	0.3	16.7
Other Machinery and Eq.	0.0	1.2	25.3	0.0	1.4	29.2
Other manufacturing	0.0	1.4	29.4	0.0	0.9	12.9
Services	**0.0**	**0.0**	**30.1**	**0.0**	**0.0**	**30.5**

Table B2 Initial subsidies and tariffs in EU-Russian bilateral trade (percent)

	EU export to Russia			EU import from Russia		
	EU Export subs.	Russian Tariff	Sh. of export to Russia	Russian Subsidy	EU Tariff	Sh. of import from Russia
Agriculture and food						
Rice	0.0	8.6	1.4	0.0	126.8	0.0
Wheat	3.4	5.0	1.1	0.0	0.1	13.7
Other cereal grains	24.3	5.0	5.1	0.0	11.7	8.4
Vegetables, fruit and nuts	2.3	11.7	14.6	0.0	2.9	0.3
Oil seeds	0.0	4.9	3.3	0.0	0.0	1.6
Sugar cane, beeds	0.0	0.1	1.2	0.0	0.0	0.9
Plant-based fibres	0.0	2.3	1.3	0.0	0.0	0.3
Other crops	0.0	8.4	8.1	0.0	1.3	0.1
Cattle, sheep, goats, horses	0.0	1.8	1.4	0.0	2.5	1.3
Other animals	0.7	8.0	3.0	0.0	0.0	9.1
Raw milk	0.0	0.0	1.6	-1.1	0.0	7.8
Wool and silk	0.0	11.1	1.9	0.0	0.0	0.0
Bovine meat products	45.7	14.3	22.5	0.0	83.6	0.7
Other meat products	0.0	18.6	8.7	0.0	19.1	1.4
Vegetable oils and fats	0.0	13.1	12.1	0.0	1.3	0.4
Dairy products	14.9	14.9	4.4	0.0	24.9	4.9
Processed rice	33.6	8.1	2.0	0.0	158.2	0.1
Sugar	53.0	34.9	3.8	0.0	55.8	0.2
Other food products	3.2	12.6	7.0	0.0	11.0	2.6
Beverages and tobacco	0.9	21.6	2.3	0.0	1.4	1.3
Manufacturing						
Natural Resources	0.0	6.3	2.2	-9.4	0.0	20.9
Textiles	0.0	13.3	4.1	-4.6	6.2	0.4
Wearing Apparel	0.0	19.3	8.1	-4.6	8.5	0.3
Leather products	0.0	17.8	5.3	-4.6	1.2	0.4
Wood products	0.0	19.0	6.6	-2.0	0.5	5.3
Paper and publishing	0.0	9.0	6.4	-2.0	0.0	6.2
Petroleum and coal	0.0	5.0	2.7	-9.5	2.6	51.0
Chemicals, rubber and plastics	0.0	9.8	3.5	-3.3	1.6	3.8
Other Mineral products	0.0	15.1	4.0	-7.3	1.0	2.9
Ferrous metals	0.0	7.5	2.3	-1.6	0.9	16.1
Other metals	0.0	12.7	2.0	-1.6	2.1	17.0
Metal products	0.0	14.6	4.2	-5.0	2.7	3.3
Motor vehicles and parts	0.0	16.3	3.3	-5.0	4.1	0.5
Other transport equipment	0.0	10.2	0.7	-5.0	0.0	0.8
Electronic equipment	0.0	6.6	4.3	-5.0	0.2	0.0
Other Machinery and Eq.	0.0	7.9	3.5	-5.0	0.1	0.9
Other manufacturing	0.0	14.6	1.2	-3.5	0.0	1.5
Services	**0.0**	**0.1**	**3.4**	**0.0**	**0.0**	**0.9**

Table B3 Initial subsidies and tariffs in EU-Chinese bilateral trade (percent)

	EU export to China			EU import from China		
	EU Export subs.	Chinese Tariff	Sh. of export to China	Chinese Subsidy	EU Tariff	Sh. of import from China
Agriculture and food						
Rice	0.0	0.7	1.3	0.0	58.5	0.7
Wheat	3.4	0.9	0.2	0.0	1.3	0.1
Other cereal grains	24.3	90.7	6.4	0.0	15.9	1.5
Vegetables, fruit and nuts	2.3	6.3	2.4	0.0	38.0	2.9
Oil seeds	0.0	9.0	1.3	0.0	0.0	2.1
Sugar cane, beeds	0.0	0.3	1.8	0.0	54.9	9.2
Plant-based fibres	0.0	5.3	12.7	0.0	0.0	0.7
Other crops	0.0	3.2	2.7	0.0	2.5	0.7
Cattle, sheep, goats, horses	0.0	0.2	3.9	0.0	8.0	0.1
Other animals	0.7	3.8	37.9	0.0	1.6	13.6
Raw milk	0.0	0.0	17.7	0.0	0.0	3.2
Wool and silk	0.0	1.8	38.3	0.0	0.0	0.6
Bovine meat products	45.7	8.5	3.2	0.0	18.1	0.1
Other meat products	0.0	7.3	21.5	0.0	8.2	1.5
Vegetable oils and fats	0.0	6.5	1.7	0.0	1.5	2.1
Dairy products	14.9	4.3	3.2	0.0	35.4	0.1
Processed rice	33.6	0.6	1.2	0.0	117.4	25.4
Sugar	56.0	11.9	1.8	0.0	127.0	0.0
Other food products	3.2	6.5	4.8	0.0	10.1	2.7
Beverages and tobacco	0.9	7.1	6.0	0.0	5.4	3.9
Manufacturing						
Natural Resources	0.0	1.8	15.0	0.0	0.2	0.1
Textiles	0.0	6.4	8.8	0.0	8.8	52.2
Wearing Apparel	0.0	8.1	6.1	0.0	10.5	59.7
Leather products	0.0	1.6	12.9	0.0	8.8	33.3
Wood products	0.0	2.9	7.0	0.0	0.4	16.6
Paper and publishing	0.0	3.6	5.3	0.0	0.0	5.5
Petroleum and coal	-0.1	5.7	1.8	0.0	0.0	0.4
Chemicals, rubber and plastics	0.0	5.8	4.4	0.0	1.7	9.1
Other Mineral products	0.0	6.7	6.5	0.0	5.6	12.5
Ferrous metals	0.0	4.6	8.8	0.0	1.6	2.6
Other metals	0.0	3.0	11.7	0.0	1.7	1.3
Metal products	0.0	7.7	4.8	0.0	2.9	28.8
Motor vehicles and parts	0.0	11.9	6.2	0.0	0.1	1.6
Other transport equipment	0.0	2.1	4.8	0.0	0.5	10.2
Electronic equipment	0.0	1.2	17.8	0.0	1.0	32.4
Other Machinery and Eq.	0.0	6.6	8.9	0.0	0.4	18.6
Other manufacturing	0.0	8.5	5.1	0.0	2.3	36.2
Services	**0.0**	**0.0**	**9.3**	**0.0**	**0.0**	**10.6**

Table B4 Initial EU subsidies and tariffs and multilateral trade scenario shocks (percent)

	EU export				EU import			
	EU Export subs.	Shock to Subsidy	Partner Tariff	Shock to Tariff	Partner Subsidy	Shock to Subsidy	EU Tariff	Shock to Tariff
Agriculture and food								
Rice	0.0	0.0	23.0	-2.9	0.0	0.0	54.0	-11.1
Wheat	3.4	-3.3	17.1	-1.7	2.2	-2.0	1.0	0.0
Other cereal grains	24.3	-19.6	17.1	-2.7	1.2	-1.1	16.7	-0.3
Vegetables, fruit and nuts	2.3	-2.3	16.0	-2.4	0.2	-0.1	16.2	-4.5
Oil seeds	0.0	0.0	12.6	-0.9	0.0	0.0	0.0	0.0
Sugar cane, beeds	0.0	0.0	30.4	-3.5	0.0	0.0	20.2	-3.5
Plant-based fibres	0.0	0.0	1.7	-0.2	0.4	-0.4	0.0	0.0
Other crops	0.0	0.0	8.5	-1.1	0.0	0.0	3.1	-0.9
Cattle, sheep, goats, horses	0.0	0.0	3.6	-1.5	0.3	-0.2	3.4	-1.6
Other animals	0.7	-0.7	6.3	-0.8	0.0	0.0	1.2	-0.2
Raw milk	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0
Wool and silk	0.0	0.0	3.9	-0.1	0.0	0.0	0.0	0.0
Bovine meat products	45.7	-31.4	20.2	-1.5	0.1	-0.1	41.1	-13.8
Other meat products	0.0	0.0	31.2	-5.7	0.3	-0.2	20.4	-4.8
Vegetable oils and fats	0.0	0.0	11.3	-0.7	0.2	-0.2	13.2	-4.1
Dairy products	14.9	-13.0	19.7	-2.9	10.0	-7.8	35.7	-8.9
Processed rice	33.6	-25.1	14.9	-2.2	0.0	0.0	92.7	-23.3
Sugar	55.0	-34.8	33.6	-4.4	0.0	0.0	102.2	-22.4
Other food products	3.2	-3.1	14.3	-1.8	0.3	-0.3	8.0	-1.9
Beverages and tobacco	0.9	-0.9	14.8	-1.8	0.0	0.0	7.4	-2.1
Manufacturing								
Natural Resources	0.0	0.0	2.4	-0.4	-2.1	0.0	0.1	0.0
Textiles	0.0	0.0	10.3	-3.5	-0.1	0.0	6.4	-2.7
Wearing Apparel	0.0	0.0	10.1	-3.3	-0.1	0.0	7.8	-3.6
Leather products	0.0	0.0	8.5	-2.9	-1.5	0.0	5.8	-2.1
Wood products	0.0	0.0	5.6	-0.8	-0.4	0.0	0.5	-0.1
Paper and publishing	0.0	0.0	4.5	-0.9	-0.1	0.0	0.0	0.0
Petroleum and coal	-0.1	0.0	6.7	-0.8	-5.2	0.0	1.5	0.0
Chemicals, rubber and plastics	0.0	0.0	4.3	-0.9	-0.7	0.0	1.8	-0.5
Other Mineral products	0.0	0.0	7.5	-1.8	-0.2	0.0	2.5	-0.8
Ferrous metals	0.0	0.0	5.1	-1.2	-0.3	0.0	0.7	0.0
Other metals	0.0	0.0	5.2	-1.7	-0.3	0.0	1.0	-0.2
Metal products	0.0	0.0	6.7	-1.5	-0.2	0.0	1.9	-0.4
Motor vehicles and parts	0.0	0.0	7.8	-2.5	0.0	0.0	6.0	-2.5
Other transport equipment	0.0	0.0	2.5	-0.2	-0.2	0.0	1.4	-0.3
Electronic equipment	0.0	0.0	2.2	-0.3	0.0	0.0	0.9	-0.3
Other Machinery and Eq.	0.0	0.0	4.4	-0.9	-0.1	0.0	1.0	-0.2
Other manufacturing	0.0	0.0	7.8	-3.1	-0.1	0.0	1.1	-0.3
Services	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Table B5 Impact on EU economy of US FTA (Million US$ / percent)

	Welfare[a]		Export		Import		Production	
	Value	Share	Value	%	Value	%	Value	%
Agriculture and food	**-902**	**-25.8**	**915**	**1.4**	**4569**	**8.2**	**-4599**	**-0.4**
Rice	54	1.5	20	24.4	204	351.6	-250	-27.4
Wheat	-16	-0.5	4	0.4	-49	-10.0	29	0.2
Other cereal grains	21	0.6	-14	-2.0	6	-0.1	-78	-0.6
Vegetables, fruit and nuts	-7	-0.2	29	0.6	112	1.6	-113	-0.2
Oil seeds	-1	0.0	4	1.5	-11	-0.2	10	0.1
Sugar cane, beeds	0	0.0	0	-0.2	0	0.0	-1	0.0
Plant-based fibres	0	0.0	2	0.4	1	0.2	4	0.2
Other crops	-16	-0.5	253	3.6	594	8.4	-377	-0.7
Cattle, sheep, goats, horses	-1	0.0	10	1.8	-3	-0.6	-200	-0.8
Other animals	-1	0.0	3	0.3	-4	-0.1	-348	-0.7
Raw milk	0	0.0	0	0.0	0	0.2	0	0.0
Wool and silk	0	0.0	0	0.1	-1	0.0	4	0.3
Bovine meat products	-129	-3.7	-72	-5.4	765	47.0	-946	-1.5
Other meat products	-254	-7.3	105	2.0	1010	101.9	-1046	-1.0
Vegetable oils and fats	-6	-0.2	29	1.8	28	1.7	-26	-0.1
Dairy products	-103	-3.0	174	5.2	381	19.6	-45	0.0
Processed rice	-93	-2.7	2	2.8	215	109.4	-207	-9.2
Sugar	-29	-0.8	10	3.6	60	5.0	0	0.0
Other food products	-327	-9.4	256	1.4	1058	6.0	-944	-0.3
Beverages and tobacco	8	0.2	101	0.5	204	4.7	-64	0.0
Manufacturing	**4391**	**125.8**	**19879**	**2.7**	**15650**	**1.9**	**7701**	**0.2**
Natural Resources	31	0.9	-48	-0.1	5	0.2	-68	0.0
Textiles	370	10.6	1550	8.4	581	1.6	1790	1.8
Wearing Apparel	499	14.3	1605	16.7	336	0.8	1524	1.8
Leather products	520	14.9	1788	14.6	344	2.1	1894	3.4
Wood products	-3	-0.1	35	0.2	154	1.2	-83	-0.1
Paper and publishing	1	0.0	-38	-0.2	24	0.2	-22	0.0
Petroleum and coal	7	0.2	55	0.5	-4	0.1	116	0.1
Chemicals, rubber and plastics	145	4.2	4321	3.3	3936	4.9	1195	0.2
Other Mineral products	509	14.6	1518	6.9	736	5.4	974	0.4
Ferrous metals	14	0.4	-13	0.0	55	0.5	-108	-0.1
Other metals	83	2.4	415	2.5	466	2.2	-38	0.0
Metal products	110	3.1	526	3.1	570	3.1	20	0.0
Motor vehicles and parts	544	15.6	3268	4.4	3083	8.6	690	0.1
Other transport equipment	16	0.5	164	0.4	867	2.0	-701	-0.6
Electronic equipment	34	1.0	-26	0.0	463	0.4	-704	-0.2
Other Machinery and Eq.	1043	29.9	3691	1.9	3698	2.4	197	0.0
Other manufacturing	470	13.5	1066	2.9	336	0.8	1024	0.5
Services	**0**	**0.0**	**-713**	**-0.2**	**435**	**0.2**	**1492**	**0.0**
Total	**3490**	**100.0**	**20081**	**1.8**	**20654**	**1.7**	**4595**	**0.0**

[a] The welfare column describes the welfare implications for the EU of liberalisation in each economic sector, measured in value (Million US$) and as a share of total economy-wide effects.

Table B6 Impact on EU economy of Russian FTA (Million US$ / percent)

	Welfare[a]		Export		Import		Production	
	Value	Share	Value	%	Value	%	Value	%
Agriculture and food	**617**	**4.6**	**1560**	**2.2**	**1679**	**3.1**	**868**	**0.1**
Rice	4	0.0	2	2.8	20	34.7	-21	-2.3
Wheat	1	0.0	-18	-1.0	4	0.8	3	0.0
Other cereal grains	20	0.2	-9	-1.8	11	2.0	-2	0.0
Vegetables, fruit and nuts	2	0.0	149	3.6	42	0.7	132	0.2
Oil seeds	-1	0.0	0	-0.2	22	0.5	-3	0.0
Sugar cane, beeds	0	0.0	0	0.0	0	0.1	2	0.1
Plant-based fibres	0	0.0	-2	-0.3	3	0.3	-1	-0.1
Other crops	-4	0.0	107	1.3	75	1.2	85	0.2
Cattle, sheep, goats, horses	0	0.0	4	0.8	-7	-1.0	-341	-1.4
Other animals	-1	0.0	0	-0.1	13	0.9	377	0.7
Raw milk	0	0.0	0	0.0	0	0.2	0	0.0
Wool and silk	0	0.0	4	0.8	4	0.7	1	0.1
Bovine meat products	180	1.3	-186	-16.7	781	48.0	-1210	-1.9
Other meat products	257	1.9	910	15.5	74	7.6	1090	1.0
Vegetable oils and fats	31	0.2	119	6.9	15	1.0	174	0.4
Dairy products	5	0.0	71	2.3	332	21.4	-47	0.0
Processed rice	-3	0.0	-1	-1.1	11	5.7	-9	-0.4
Sugar	1	0.0	-1	-1.5	29	2.4	0	0.0
Other food products	80	0.6	302	1.6	238	1.4	375	0.1
Beverages and tobacco	44	0.3	109	0.6	13	0.3	264	0.2
Manufacturing	**12800**	**95.3**	**10577**	**1.4**	**9026**	**1.5**	**5409**	**0.1**
Natural Resources	6222	46.3	1961	11.1	967	2.9	-531	-0.3
Textiles	143	1.1	473	2.5	398	1.1	450	0.4
Wearing Apparel	266	2.0	963	9.9	364	0.8	800	0.9
Leather products	162	1.2	630	5.1	193	1.2	631	1.1
Wood products	225	1.7	574	3.2	136	1.1	789	0.5
Paper and publishing	93	0.7	235	1.1	188	1.5	375	0.1
Petroleum and coal	3088	23.0	465	4.2	955	10.0	-268	-0.2
Chemicals, rubber and plastics	527	3.9	1856	1.5	618	1.0	2988	0.4
Other Mineral products	184	1.4	466	2.1	203	1.8	506	0.2
Ferrous metals	105	0.8	164	0.9	176	1.6	4	0.0
Other metals	232	1.7	454	2.8	689	3.4	-292	-0.3
Metal products	180	1.3	376	2.1	478	2.9	86	0.0
Motor vehicles and parts	278	2.1	1061	1.3	347	1.1	1352	0.3
Other transport equipment	119	0.9	-97	-0.3	315	0.8	-428	-0.4
Electronic equipment	138	1.0	123	0.1	958	0.7	-604	-0.2
Other Machinery and Eq.	680	5.1	518	0.2	1802	1.3	-865	-0.1
Other manufacturing	157	1.2	353	1.0	239	0.7	419	0.2
Services	**18**	**0.1**	**-1207**	**-0.4**	**1462**	**0.4**	**9872**	**0.1**
Total	**13433**	**100.0**	**10930**	**0.9**	**12166**	**1.3**	**16150**	**0.1**

[a] The welfare column describes the welfare implications for the EU of liberalisation in each economic sector, measured in value (Million US$) and as a share of total economy-wide effects.

Table B7 Impact on EU economy of Chinese FTA (Million US$ / percent)

	Welfare[a]		Export		Import		Production	
	Value	Share	Value	%	Value	%	Value	%
Agriculture and food	**705**	**15.4**	**1552**	**0.1**	**1137**	**2.1**	**942**	**0.1**
Rice	10	0.2	4	5.5	19	35.3	-99	-10.9
Wheat	0	0.0	-22	-1.2	5	0.9	-7	-0.1
Other cereal grains	-4	-0.1	158	9.4	10	1.9	160	1.2
Vegetables, fruit and nuts	388	8.5	23	0.7	392	5.1	-415	-0.8
Oil seeds	0	0.0	1	0.3	13	0.2	4	0.1
Sugar cane, beeds	0	0.0	0	-0.1	0	0.0	1	0.0
Plant-based fibres	-1	0.0	28	4.3	-6	-0.3	21	1.4
Other crops	0	0.0	21	0.2	15	0.3	-32	-0.1
Cattle, sheep, goats, horses	0	0.0	0	0.1	0	0.0	-43	-0.2
Other animals	-5	-0.1	101	3.5	12	0.5	487	1.0
Raw milk	0	0.0	0	0.1	0	0.0	0	0.0
Wool and silk	1	0.0	66	10.9	-4	-0.8	62	5.1
Bovine meat products	32	0.7	-35	-2.7	64	4.0	-158	-0.2
Other meat products	80	1.7	963	16.5	23	2.4	1063	1.0
Vegetable oils and fats	3	0.1	17	1.1	4	0.3	40	0.1
Dairy products	3	0.1	-35	-1.5	13	0.9	-21	0.0
Processed rice	121	2.6	1	0.8	373	188.0	-451	-20.0
Sugar	1	0.0	-1	-0.3	26	2.1	0	0.0
Other food products	52	1.1	149	0.8	158	0.9	184	0.1
Beverages and tobacco	26	0.6	115	0.8	19	0.5	146	0.1
Manufacturing	**3876**	**84.6**	**23102**	**3.1**	**24519**	**2.8**	**5945**	**0.1**
Natural Resources	-83	-1.8	413	2.1	440	0.4	80	0.0
Textiles	104	2.3	1746	10.2	5131	12.5	-5070	-5.1
Wearing Apparel	-1136	-24.8	914	10.3	8044	15.5	-6180	-7.3
Leather products	48	1.0	632	5.5	2290	12.7	-1797	-3.2
Wood products	45	1.0	243	1.4	33	0.2	361	0.2
Paper and publishing	57	1.3	180	0.9	40	0.3	226	0.1
Petroleum and coal	-16	-0.3	53	0.4	15	0.1	120	0.1
Chemicals, rubber and plastics	675	14.7	2199	1.7	707	0.9	1770	0.2
Other Mineral products	154	3.4	577	2.6	527	3.8	287	0.1
Ferrous metals	120	2.6	419	2.1	118	1.0	1160	0.7
Other metals	112	2.4	430	2.5	202	1.0	797	0.8
Metal products	157	3.4	497	2.9	1001	5.3	476	0.2
Motor vehicles and parts	532	11.6	2340	3.0	161	0.5	3079	0.6
Other transport equipment	101	2.2	306	0.7	168	0.4	252	0.2
Electronic equipment	723	15.8	1312	1.9	2612	1.7	-407	-0.1
Other Machinery and Eq.	2011	43.9	9047	4.6	1376	0.9	9918	1.3
Other manufacturing	271	5.9	1793	4.9	1653	3.5	874	0.4
Services	**0**	**0.0**	**-89**	**0.0**	**400**	**0.1**	**4154**	**0.0**
Total	**4581**	**100**	**24566**	**2.1**	**26057**	**2.0**	**11041**	**0.1**

[a] The welfare column describes the welfare implications for the EU of liberalisation in each economic sector, measured in value (Million US$) and as a share of total economy-wide effects.

Table B8 Impact on EU economy of Doha scenario (Million US$ / percent)

	Welfare[a]		Export		Import		Production	
	Value	Share	Value	%	Value	%	Value	%
Agriculture and food	**700**	**9.1**	**-3100**	**-0.34**	**6277**	**2.07**	**-14101**	**-1.32**
Rice	1497	19.5	218	235.1	102	278.3	-64	-7.0
Wheat	-387	-5.0	-23	-3.0	-26	-3.0	-113	-0.8
Other cereal grains	-10	-0.1	-217	-33.7	-27	-4.9	-532	-3.9
Vegetables, fruit and nuts	356	4.6	-80	-3.9	927	12.4	-1269	-2.3
Oil seeds	-790	-10.3	-85	-25.0	-167	-3.0	-186	-2.5
Sugar cane, beeds	0	0.0	0	-0.3	-1	-0.4	-4	-0.1
Plant-based fibres	-8	-0.1	-5	-0.1	-15	1.6	-36	-2.4
Other crops	-88	-1.1	-841	-10.5	422	8.1	-1567	-2.8
Cattle, sheep, goats, horses	-3	0.0	85	14.4	-16	-2.3	-1041	-4.2
Other animals	-62	-0.8	14	0.7	-17	-0.1	-146	-0.3
Raw milk	0	0.0	-3	0.8	-2	1.2	0	0.0
Wool and silk	-1	0.0	-23	-3.3	-40	-5.2	-11	-0.9
Bovine meat products	789	10.3	-1182	-92.0	2288	141.2	-5237	-8.2
Other meat products	-1299	-16.9	468	8.6	640	68.1	-280	-0.3
Vegetable oils and fats	100	1.3	-102	-5.5	547	35.1	-899	-2.0
Dairy products	356	4.6	-770	-33.8	361	20.8	-534	-0.5
Processed rice	-436	-5.7	-85	-77.8	199	125.6	-513	-22.8
Sugar	640	8.3	-179	-58.1	92	7.8	-3	0.0
Other food products	-43	-0.6	-518	-5.6	838	5.1	-1941	-0.7
Beverages and tobacco	88	1.1	229	1.1	171	4.2	275	0.2
Manufacturing	**6983**	**90.9**	**33391**	**4.5**	**29311**	**3.4**	**12487**	**0.3**
Natural Resources	-273	-3.6	742	3.2	1123	0.4	353	0.2
Textiles	1099	14.3	2857	15.9	3275	8.2	-901	-0.9
Wearing Apparel	645	8.4	979	10.6	4546	8.9	-3140	-3.7
Leather products	900	11.7	927	7.8	1627	9.4	-733	-1.3
Wood products	189	2.5	587	3.3	93	0.6	922	0.6
Paper and publishing	210	2.7	715	3.5	99	0.7	757	0.2
Petroleum and coal	-265	-3.5	486	2.7	118	0.4	300	0.2
Chemicals, rubber and plastics	-247	-3.2	2059	1.6	2931	3.8	-1229	-0.2
Other Mineral products	379	4.9	1434	6.4	595	4.3	1062	0.5
Ferrous metals	98	1.3	917	4.6	149	1.2	1574	0.9
Other metals	117	1.5	1719	10.1	690	3.1	1839	1.8
Metal products	347	4.5	1139	6.7	522	2.7	1003	0.3
Motor vehicles and parts	918	11.9	4332	5.7	4996	14.1	-505	-0.1
Other transport equipment	54	0.7	-377	-0.8	718	1.7	-1204	-1.1
Electronic equipment	243	3.2	352	0.5	2096	1.3	-1702	-0.5
Other Machinery and Eq.	1048	13.6	5945	3.0	2305	1.5	4426	0.6
Other manufacturing	1520	19.8	8577	22.7	3428	7.5	9666	4.3
Services	**0**	**0.0**	**1165**	**0.3**	**520**	**0.1**	**6605**	**0.1**
Total	**7,672**	**100**		**2.61**		**2.80**		**0.03**

[a] The welfare column describes the welfare implications for the EU of liberalisation in each economic sector, measured in value (Million US$) and as a share of total economy-wide effects.

Appendix C: Detailed tables at sectoral level, Danish results

Table C1 Impact on Danish economy of US FTA scenario (Million US$ / percent)

	Welfare[a]		Export		Import		Production	
	Value	Share	Value	%	Value	%	Value	%
Agriculture and food	**-40**	**-95**	**-68.2**		**17.9**		**-131.6**	
Rice	2.0	4.9	-0.4	-19.4	-0.1	-2.5	-0.4	-18.9
Wheat	0.1	0.3	1.9	1.7	-0.2	-0.5	0.5	0.1
Other cereal grains	0.6	1.3	-1.6	-1.1	0.0	0.1	-3.4	-0.7
Vegetables, fruit and nuts	0.0	0.0	0.0	0.0	-0.3	0.0	-0.3	-0.1
Oil seeds	0.0	0.0	0.3	1.0	-0.2	0.0	0.3	0.7
Sugar cane, beeds	0.0	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Plant-based fibres	0.0	0.0	0.0	0.2	0.0	-0.2	0.0	0.1
Other crops	-7.7	-18.6	-11.6	-0.7	3.5	0.8	-18.4	-0.9
Cattle, sheep, goats, horses	0.0	-0.1	0.1	0.6	-0.1	-2.0	-4.4	-3.0
Other animals	-0.2	-0.5	-0.8	-0.1	-1.0	-0.3	-15.0	-0.5
Raw milk	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0
Wool and silk	0.0	0.0	0.0	0.4	0.0	0.1	0.0	0.3
Bovine meat products	2.0	4.7	-4.6	-2.5	8.8	3.8	-17.5	-3.6
Other meat products	-24.1	-58.0	-31.5	-0.8	0.1	0.2	-35.2	-0.7
Vegetable oils and fats	-0.1	-0.3	0.2	0.3	-0.4	-0.4	-0.2	-0.1
Dairy products	-4.9	-11.7	5.5	0.4	6.9	2.5	-0.1	0.0
Processed rice	-0.5	-1.1	-0.5	-21.6	-0.1	0.2	-0.7	-10.5
Sugar	0.9	2.1	-0.4	-2.3	-1.7	-1.4	0.0	0.0
Other food products	-7.9	-19.1	-24.2	-0.9	3.4	0.3	-36.4	-0.6
Beverages and tobacco	0.2	0.5	-0.7	-0.2	-0.8	-0.1	-0.6	0.0
Manufacturing	**-1.9**	**-5**	**104.9**		**12.2**		**83.3**	
Natural Resources	0.2	0.5	1.4	0.1	-5.9	-0.1	-1.2	0.0
Textiles	-0.4	-1.0	12.8	1.2	-0.8	0.5	13.5	0.9
Wearing Apparel	-0.6	-1.5	5.5	0.7	4.3	0.1	5.4	0.4
Leather products	0.8	1.9	20.6	6.3	-0.4	0.7	22.3	4.2
Wood products	0.1	0.3	4.7	0.2	3.4	0.3	4.9	0.2
Paper and publishing	0.0	0.0	0.5	0.1	4.5	-0.1	-0.5	0.0
Petroleum and coal	0.1	0.4	2.3	0.3	-1.4	0.0	2.1	0.1
Chemicals, rubber and plastics	-12.2	-29.3	-7.0	-0.1	-1.7	0.1	-14.5	-0.2
Other Mineral products	-1.8	-4.3	-3.5	-0.5	2.2	0.1	-6.5	-0.2
Ferrous metals	0.1	0.3	0.1	0.0	0.9	0.1	0.2	0.0
Other metals	-0.9	-2.1	-2.5	-0.6	0.9	0.1	-2.7	-0.5
Metal products	0.7	1.7	5.7	0.5	0.0	0.1	5.0	0.1
Motor vehicles and parts	-3.1	-7.3	-7.6	-0.9	1.3	0.1	-10.5	-0.4
Other transport equipment	1.0	2.5	-3.2	-0.5	-0.2	0.0	-3.3	-0.5
Electronic equipment	1.0	2.4	5.6	0.3	-1.9	0.1	6.8	0.2
Other Machinery and Eq.	14.5	34.7	69.4	0.8	1.0	0.1	63.8	0.5
Other manufacturing	-1.5	-3.7	0.3	0.1	6.1	0.2	-1.3	0.0
Services	**0.0**	**0.0**	**34.4**	**0.1**	**0.9**	**-0.1**	**-30.3**	**0.0**
Total	**-41.6**	**100**	**36.7**		**30.1**		**-48.3**	

[a] The welfare column describes the welfare implications for the EU of liberalisation in each economic sector, measured in value (Million US$) and as a share of total economy-wide effects.

Table C2 Impact on Danish economy of Russian FTA scenario (Million US$ / per-cent)

	Welfare[a]		Export		Import		Production	
	Value	Share	Value	%	Value	%	Value	%
Agriculture and food	**43**	**73**	**114.8**		**27.0**		**163.2**	
Rice	0.0	0.0	-0.3	-15.1	0.0	0.1	-0.3	-14.4
Wheat	0.0	0.0	-2.0	-1.9	0.3	0.8	0.7	0.1
Other cereal grains	0.7	1.2	-4.7	-3.1	0.2	0.3	-2.3	-0.5
Vegetables, fruit and nuts	-0.5	-0.8	-0.3	-0.2	0.5	0.0	-0.1	0.0
Oil seeds	0.0	0.0	-0.2	-0.6	0.4	0.5	-0.1	-0.3
Sugar cane, beeds	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Plant-based fibres	0.0	0.0	0.0	-0.7	0.0	0.2	0.0	-0.6
Other crops	-0.1	-0.1	-3.6	-0.2	0.2	0.0	-3.0	-0.1
Cattle, sheep, goats, horses	0.0	0.0	0.3	2.2	-0.1	-1.5	-3.5	-2.4
Other animals	0.2	0.3	-1.1	-0.1	2.1	1.2	46.0	1.5
Raw milk	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0
Wool and silk	0.0	0.0	0.0	-1.5	0.0	0.2	0.0	-1.0
Bovine meat products	-0.2	-0.4	-14.0	-7.8	0.9	0.3	-15.1	-3.1
Other meat products	48.8	82.0	111.9	2.9	1.0	0.3	117.1	2.2
Vegetable oils and fats	-0.2	-0.4	1.0	1.3	0.7	0.9	1.9	0.6
Dairy products	-9.8	-16.4	0.2	0.0	3.2	1.9	-0.7	0.0
Processed rice	0.1	0.2	0.0	-1.7	0.0	0.3	-0.1	-1.1
Sugar	0.3	0.5	-0.5	-2.9	0.7	1.1	0.0	0.0
Other food products	4.5	7.6	27.1	1.0	16.4	0.9	21.0	0.4
Beverages and tobacco	-0.3	-0.5	1.1	0.3	0.4	0.0	1.8	0.1
Manufacturing	**16.3**	**27**	**-24.8**		**-5.0**		**-36.4**	
Natural Resources	19.7	33.2	-8.4	-0.4	-25.0	-0.2	-9.2	-0.3
Textiles	0.7	1.2	6.5	0.6	0.4	0.2	6.3	0.4
Wearing Apparel	-0.8	-1.4	3.3	0.4	2.6	0.2	2.3	0.2
Leather products	-0.2	-0.3	10.5	3.2	2.2	0.3	11.6	2.2
Wood products	2.1	3.5	16.1	0.7	2.1	0.5	16.3	0.5
Paper and publishing	-0.3	-0.5	0.8	0.1	7.3	0.1	1.4	0.0
Petroleum and coal	-9.7	-16.2	-14.0	-1.8	2.0	0.0	-11.2	-0.7
Chemicals, rubber and plastics	-3.8	-6.5	-41.8	-0.7	-6.7	0.1	-51.3	-0.5
Other Mineral products	1.8	3.0	2.9	0.5	-2.5	0.2	0.1	0.0
Ferrous metals	3.2	5.4	-1.3	-0.3	1.5	0.0	-2.0	-0.3
Other metals	4.1	6.9	1.7	0.4	-0.7	0.1	1.3	0.2
Metal products	-0.3	-0.5	-2.9	-0.3	0.0	0.0	-1.7	0.0
Motor vehicles and parts	-3.9	-6.5	3.0	0.3	0.6	0.0	3.0	0.1
Other transport equipment	-0.3	-0.5	-2.7	-0.4	1.6	0.0	-2.7	-0.4
Electronic equipment	-0.3	-0.5	-1.4	-0.1	0.4	0.0	-2.6	-0.1
Other Machinery and Eq.	3.8	6.4	0.4	0.0	3.1	0.0	0.2	0.0
Other manufacturing	0.4	0.7	2.6	0.5	6.2	0.2	1.9	0.1
Services	**-0.3**	**-0.5**	**-34.5**	**-0.1**	**1.5**	**0.1**	**-25.1**	**0.0**
Total	**59.8**	**100**	**90.0**		**22.0**		**126.8**	

[a] The welfare column describes the welfare implications for the EU of liberalisation in each economic sector, measured in value (Million US$) and as a share of total economy-wide effects.

Table C3 Impact on Danish economy of Chinese FTA scenario (Million US$ / per-cent)

	Welfare[a]		Export		Import		Production	
	Value	Share	Value	%	Value	%	Value	%
Agriculture and food	**78**	**60**	**128.0**		**13.9**		**207.0**	
Rice	0.1	0.1	-0.3	-15.0	0.0	-0.2	-0.3	-14.5
Wheat	0.0	0.0	-3.3	-3.1	0.4	1.3	0.2	0.1
Other cereal grains	0.0	0.0	-1.2	-0.8	0.2	0.2	2.9	0.6
Vegetables, fruit and nuts	2.8	2.1	-1.3	-1.1	0.5	0.2	-2.0	-0.7
Oil seeds	0.0	0.0	-0.3	-1.1	0.2	0.2	-0.4	-0.7
Sugar cane, beeds	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Plant-based fibres	-0.1	0.0	0.0	-1.1	0.0	0.1	0.0	-1.0
Other crops	-0.4	-0.3	-14.8	-0.9	-2.1	-0.5	-14.8	-0.7
Cattle, sheep, goats, horses	0.0	0.0	-0.1	-0.5	0.0	-0.5	-1.6	-1.1
Other animals	1.3	1.0	5.1	0.6	3.0	1.6	68.1	2.3
Raw milk	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0
Wool and silk	0.0	0.0	0.0	-1.5	-0.2	-2.8	0.0	-0.8
Bovine meat products	-0.9	-0.7	-6.4	-3.6	1.6	0.7	-5.8	-1.2
Other meat products	68.1	52.2	150.7	3.9	2.7	0.9	156.8	2.9
Vegetable oils and fats	0.0	0.0	-0.1	-0.1	1.2	1.5	0.9	0.3
Dairy products	-1.0	-0.8	-0.9	-0.1	0.2	0.1	-0.2	0.0
Processed rice	3.5	2.7	-0.9	-42.6	-0.6	-3.6	-2.2	-34.4
Sugar	0.4	0.3	-0.4	-2.0	0.9	1.6	0.0	0.0
Other food products	4.2	3.2	2.7	0.1	5.6	0.3	5.5	0.1
Beverages and tobacco	-0.4	-0.3	-0.5	-0.1	0.4	0.1	-0.1	0.0
Manufacturing	**52.7**	**40**	**160.6**		**199.6**		**39.6**	
Natural Resources	-1.4	-1.1	-1.7	-0.1	0.8	0.1	-0.8	0.0
Textiles	11.8	9.1	-18.7	-1.7	0.4	-0.6	-55.3	-3.9
Wearing Apparel	-17.5	-13.4	-40.6	-4.8	-6.6	6.1	-96.5	-7.8
Leather products	8.4	6.4	-16.2	-5.0	108.7	0.9	-24.9	-4.7
Wood products	-0.5	-0.4	1.9	0.1	4.6	-0.2	2.4	0.1
Paper and publishing	0.1	0.1	0.7	0.1	-4.0	0.1	1.3	0.0
Petroleum and coal	0.0	0.0	1.0	0.1	1.9	0.1	1.9	0.1
Chemicals, rubber and plastics	2.8	2.1	0.5	0.0	0.4	0.0	-4.2	0.0
Other Mineral products	0.6	0.4	-2.0	-0.3	-0.6	0.4	-6.8	-0.2
Ferrous metals	-0.4	-0.3	3.0	0.6	4.3	0.6	3.6	0.5
Other metals	-0.2	-0.1	4.6	1.1	6.3	0.5	4.9	0.9
Metal products	4.8	3.7	2.3	0.2	2.7	1.1	3.7	0.1
Motor vehicles and parts	-6.2	-4.8	-1.9	-0.2	14.2	0.2	-1.6	-0.1
Other transport equipment	2.2	1.7	4.0	0.6	4.1	0.2	4.0	0.6
Electronic equipment	8.2	6.3	-11.8	-0.6	3.9	0.5	-17.9	-0.5
Other Machinery and Eq.	39.9	30.6	239.8	2.7	21.5	0.5	243.8	1.9
Other manufacturing	0.1	0.1	-4.4	-0.8	37.1	1.3	-18.0	-0.7
Services	**0.0**	**0.0**	**-59.7**	**-0.2**	**12.6**	**0.3**	**-55.2**	**0.0**
Total	**130.4**	**100**	**288.6**		**213.4**		**246.7**	

[a] The welfare column describes the welfare implications for the EU of liberalisation in each economic sector, measured in value (Million US$) and as a share of total economy-wide effects.

Table C4 Impact on Danish economy of Doha scenario (Million US$ / percent)

	Welfare[a]		Export		Import		Production	
	Value	Share	Value	%	Value	%	Value	%
Agriculture and food	**22**	**20**	**-127.9**		**-35.8**		**-74.5**	
Rice	-43.6	-40.2	-1.3	-69.0	-0.4	-13.0	-1.3	-66.4
Wheat	-8.6	-7.9	2.9	2.7	-0.1	0.8	6.4	1.4
Other cereal grains	-8.6	-7.9	-20.8	-13.7	-1.1	-0.7	-19.4	-3.9
Vegetables, fruit and nuts	3.4	3.1	-2.3	-1.9	-1.6	0.0	-3.4	-1.3
Oil seeds	-14.2	-13.0	-2.9	-9.5	-3.8	-3.2	-3.0	-6.1
Sugar cane, beeds	0.0	0.0	0.0	-0.2	0.0	-0.1	0.0	0.0
Plant-based fibres	0.0	0.0	-0.3	-9.5	0.0	-0.5	-0.3	-9.1
Other crops	-10.2	-9.4	-161.5	-9.6	-17.5	-2.6	-166.0	-8.1
Cattle, sheep, goats, horses	0.0	0.0	0.5	3.0	-0.4	-8.9	-21.5	-14.7
Other animals	-3.3	-3.1	0.7	0.1	2.9	2.9	109.5	3.7
Raw milk	0.0	0.0	0.0	1.0	-0.1	1.8	0.0	0.0
Wool and silk	0.0	0.0	-0.1	-4.2	-0.2	-2.4	-0.1	-2.9
Bovine meat products	-14.8	-13.6	-72.7	-40.7	2.5	1.8	-85.2	-17.5
Other meat products	135.0	124.2	265.8	6.9	2.9	1.5	271.5	5.1
Vegetable oils and fats	0.2	0.2	-6.0	-7.9	2.0	4.6	-9.1	-2.7
Dairy products	-13.1	-12.0	-1.4	-0.1	-10.5	-1.3	-4.9	-0.1
Processed rice	-20.3	-18.7	-1.6	-73.4	-3.2	-15.5	-2.9	-44.6
Sugar	15.9	14.6	-3.8	-21.2	-11.9	-3.4	-0.4	-0.1
Other food products	1.6	1.5	-122.6	-4.5	7.4	1.0	-146.8	-2.6
Beverages and tobacco	2.5	2.3	-0.5	-0.1	-2.4	-0.1	2.2	0.1
Manufacturing	**86.7**	**80**	**-25.3**		**61.3**		**-169.1**	
Natural Resources	-0.2	-0.2	22.8	1.0	11.8	0.0	4.0	0.1
Textiles	18.5	17.0	-30.8	-2.9	-2.4	-1.6	-54.1	-3.8
Wearing Apparel	4.4	4.0	-48.5	-5.8	-19.6	2.9	-80.0	-6.5
Leather products	17.1	15.8	-17.6	-5.4	52.2	0.4	-24.8	-4.7
Wood products	1.6	1.4	14.9	0.6	1.2	-0.1	16.5	0.5
Paper and publishing	0.4	0.4	5.1	0.7	0.3	-0.2	3.3	0.0
Petroleum and coal	-1.9	-1.8	7.6	1.0	-0.8	-0.1	8.1	0.5
Chemicals, rubber and plastics	-7.8	-7.2	-26.2	-0.4	3.6	-0.4	-37.8	-0.4
Other Mineral products	2.6	2.4	3.7	0.6	-19.3	0.1	2.1	0.1
Ferrous metals	0.8	0.7	8.8	1.7	1.7	0.0	8.8	1.3
Other metals	-0.9	-0.8	14.3	3.4	0.3	0.4	14.6	2.8
Metal products	4.0	3.6	5.2	0.5	2.3	0.2	-0.6	0.0
Motor vehicles and parts	22.2	20.5	-30.5	-3.5	3.5	0.6	-44.7	-1.9
Other transport equipment	11.2	10.3	6.9	1.1	10.7	0.1	6.8	1.1
Electronic equipment	6.8	6.3	-17.9	-0.9	1.4	0.1	-25.6	-0.7
Other Machinery and Eq.	18.8	17.3	61.3	0.7	4.9	0.1	42.7	0.3
Other manufacturing	-10.8	-10.0	-4.3	-0.8	9.4	0.2	-8.4	-0.3
Services	**0.3**	**0.3**	**250.3**	**0.9**	**2.8**	**0.1**	**185.1**	**0.1**
Total	**108.4**	**100**	**-153.2**		**25.5**		**-243.5**	

[a] The welfare column describes the welfare implications for the EU of liberalisation in each economic sector, measured in value (Million US$) and as a share of total economy-wide effects.

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